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TRANSACTIONS  
OF THE  
CALIFORNIA  
STATE AGRICULTURAL SOCIETY  
DURING THE YEAR 1901.

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SANTA CRUZ



SACRAMENTO:

W. W. SHANNON, : : : : SUPERINTENDENT STATE PRINTING.  
1903.

# STATE BOARD OF AGRICULTURE, 1901.

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OFFICE OF THE STATE BOARD OF AGRICULTURE,  
SACRAMENTO, CAL., February 1, 1902.

*To the HON. HENRY T. GAGE, Governor of California :*

SIR: In compliance with law, we have the honor to submit our annual report for the fiscal year ending January 31, 1902.

The resources of California should be understood and as broadly advertised as possible; with this end in view we have collected complete reports from each county, containing data in relation to general agricultural pursuits, cereal products, horse, cattle, sheep, and swine breeding, and fruit and dairy interests, together with such other information bearing upon the growth and prosperity of California as it is possible to obtain. We feel certain that the information contained in this report will be of great value to the people of the State, and will give to the world at large an idea of what can be accomplished by those who desire to till the fertile soil and exploit the great mineral deposits of California.

Respectfully submitted.

GEORGE W. JACKSON,  
Secretary.

A. B. SPRECKELS,  
President.





# FINANCIAL STATEMENT.

FEBRUARY 1, 1901, TO JANUARY 31, 1902.

## SUMMARY.

1901.		RECEIPTS.	
Feb. 1—	Cash balance.....	\$1,316	26
	Rent.....	1,629	60
	Bills payable, for bills of 1900.....	1,180	10
	Bills payable.....	8,979	87
	Park and Pavilion receipts.....	34,267	30
	Premiums.....	15,000	00
	Races.....	10,617	50
	Entrances due, collected.....	1,079	45
	Fixed events.....	4,740	00
	Bank balance February 1, 1901.....	2,778	75
	Bank account overdrawn February 1, 1902.....	4,048	36
			<u>\$85,565 19</u>

## DISBURSEMENTS.

	Expense.....	\$22,205	10
	Races.....	30,355	00
	Advertising.....	2,198	13
	Salaries.....	5,120	00
	Premiums.....	8,974	25
	Insurance.....	657	75
	Interest.....	3,263	22
	Bills payable.....	7,520	46
	Entrance due.....	1,025	00
	Building and improvement.....	1,632	69
	Park and Pavilion rebates.....	1,500	75
	Rent rebate.....	250	00
1902.			
Feb. 1—	Cash balance.....	862	84
			<u>\$85,565 19</u>

## RECEIPTS.

1901.			
Feb. 1—	Bank balance.....	\$2,778	75
	Cash balance.....		1,316 26

## RACES, 1901.

Race 1—	The Occident Stake.....	\$325	00
2—	Pacing purse, 2:12 class.....	300	00
3—	Running purse.....		
4—	Running purse.....		
5—	Running purse.....		
6—	Running purse.....		
7—	Pacing purse, 2:20 class.....	300	00
8—	Trotting purse, 2:40 class.....	720	00
9—	Running purse.....		
10—	Flash Stake.....	270	00
11—	Running purse.....		
12—	Running purse.....		
13—	Pacing Stake, three-year-olds.....	110	00
14—	Pacing purse, 2:18 class.....	200	00
Amount carried forward.....		\$2,225	00
			<u>\$4,095 01</u>

2—AS

	Amount brought forward.....	\$2,225 00	\$4,095 01
Race 15—	Running purse.....		
16—	Shafter Selling Stake.....	290 00	
17—	Running purse.....		
18—	Running purse.....		
19—	Sacramento Driving Club road race.....		
20—	Trotting purse, 2:14 class.....	220 00	
21—	Running purse.....	750 00	
22—	Sacramento State Fair Stake.....		
23—	Running purse.....	230 00	
24—	Running purse.....		
25—	Trotting purse, 2:20 class.....	600 00	
26—	Drummers' race.....		
27—	Running purse.....		
28—	Running purse.....		
29—	Running purse.....		
30—	Running purse.....		
31—	Pacing purse, 2:17 class.....	680 00	
32—	Running purse.....		
32A—	Running purse.....		
33—	Vinctor Stake.....	250 00	
34—	Futurity Stake.....	750 00	
34A—	Running purse.....	200 00	
35—	Running purse.....		
36—	Stanford Stake.....	280 00	
37—	Trotting purse, special.....	180 00	
38—	Running purse.....		
39—	Running purse.....		
40—	Running purse.....		
41—	Running purse.....	11 25	
42—	Trotting purse, 2:15 class, special.....	200 00	
43—	Sacramento road race, special.....	180 00	
44—	Running purse.....		
45—	Running purse.....		
46—	Running purse, special.....	150 00	
47—	Running purse.....		
47A—	Running purse.....		
48—	Pacing purse, 2:25 class.....	720 00	
49—	Trotting purse, 2:24 class.....	225 00	
50—	Running purse.....		
51—	Running purse.....		
52—	Running purse.....		
53—	Running purse.....		
54—	Pacing purse, 2:13 class.....	800 00	
55—	Pacing purse, special.....	180 00	
56—	Running purse.....	11 25	
57—	Sunny Slope Stake.....	220 00	
57A—	Running purse, handicap.....	225 00	
58—	Governor's handicap.....	280 00	
59—	High weight handicap.....		
59A—	Running purse.....	200 00	
60—	Trotting purse, special.....	180 00	
61—	Pacing purse, special.....	180 00	
62—	Running purse.....		
63—	Running purse.....		
64—	Running purse.....		
65—	Running purse.....		
65A—	Running purse.....	200 00	
			<hr/> \$10,617 50

## PARK AND PAVILION RECEIPTS.

1901.			
Sept.	2—Park ticket sales.....	\$1,230 80	
	3—Park ticket sales.....	347 00	
	4—Park ticket sales.....	455 75	
	5—Park ticket sales.....	515 75	
	6—Park ticket sales.....	628 50	
	7—Park ticket sales.....	733 75	
	9—Park ticket sales.....	784 75	
	10—Park ticket sales.....	587 25	
	11—Park ticket sales.....	804 00	
	12—Park ticket sales.....	1,362 00	
	13—Park ticket sales.....	804 25	
			<hr/> \$8,253 80
	Amount carried forward.....		\$22,966 31

Sept.	Amount brought forward.....	\$22,966 31
2	Pavilion ticket sales.....	\$482 75
3	Pavilion ticket sales.....	301 00
4	Pavilion ticket sales.....	333 75
5	Pavilion ticket sales.....	318 50
6	Pavilion ticket sales.....	354 25
7	Pavilion ticket sales.....	726 50
9	Pavilion ticket sales.....	621 50
10	Pavilion ticket sales.....	645 00
11	Pavilion ticket sales.....	1,036 00
12	Pavilion ticket sales.....	925 00
13	Pavilion ticket sales.....	985 50
		<hr/>
		\$6,729 75
	Sweepstakes.....	\$194 00
	Sale of forage.....	120 45
	Manure privilege.....	150 00
	Sale of water cart.....	30 00
	Use of gas by Seventh Ward Club.....	2 50
	Pool privilege.....	17,505 00
	Refreshment privilege.....	505 00
	Programme privilege.....	705 30
	Jewelry concession.....	15 00
	Sale of old lumber.....	1 00
	Gas used by Election Board.....	5 50
	C. A. Owens, fine.....	50 00
		<hr/>
		\$19,283 75

## PREMIUMS.

State warrant for premiums and care of buildings.....	\$15,000 00
---	-------------

## BILLS PAYABLE.

J. E. Terry.....	\$855 00
San Francisco Call.....	175 00
San Francisco Examiner.....	150 00
San Francisco Chronicle.....	100 00
San Francisco Bulletin.....	100 00
Tom Scott.....	155 00
L. R. Davis.....	177 00
J. A. Lafferty.....	100 50
B. A. Johnson.....	451 79
Melvin & Son.....	75 20
George Boyne.....	408 14
G. W. Curry.....	488 97
Dr. G. W. Dufficy.....	162 00
Schaw, Ingram, Batcher & Co.....	582 84
George B. Stack.....	345 85
Wood, Curtis & Co.....	235 28
C. W. Paine.....	166 00
Miller & Mathews.....	250 00
C. H. Krebs & Co.....	307 60
C. M. Campbell.....	68 15
Wright & Kimbrough.....	63 60
Frank Hickman.....	69 60
H. J. Goethe.....	44 65
W. P. Coleman Co.....	154 05
Bosqui Engraving Co.....	135 00
Faraday & Co.....	42 40
Shreve & Co.....	115 25
Hawk & Carly.....	85 00
California State Bank.....	213 30
Wiseman & Wulff.....	63 70
Hawley, Bohl & Phillips.....	37 20
Curtis, Carmichael & Brand.....	97 55
S. Dwyer.....	57 50
Friend & Terry Lumber Co.....	477 05
Dr. G. L. Stephenson.....	50 00
Sacramento Electric, Gas, and Railway Co.....	700 00
Central California Electric Co.....	225 00
Sacramento Record-Union.....	267 55
Sacramento Bee.....	184 08
Capital Gas Co.....	229 50
Miller Bros.....	140 00
Phoenix Milling Co.....	173 67
	<hr/>
	\$8,979 87

Amount carried forward.....	\$63,979 81
-----------------------------	-------------

Amount brought forward..... \$8,979 87 \$63,979 81

## FOR BILLS OF 1900.

Tom Scott..... \$170 10  
Shreve & Co. .... 938 00  
----- \$10,087 97

## ENTRANCES DUE, COLLECTED.

1901.  
June 27—S. C. Tryon & Co. .... \$200 00  
Aug. 24—On "Teddy the Roan" ..... 11 25  
      On "El Diablo" ..... 50 00  
      On "Sir Albert S" ..... 105 50  
      Ed. Grazer ..... 31 20  
      On "Advertisor" ..... 55 00  
Oct. 22—On "Lena Hawley" ..... 27 50  
      On "Ida Sultan" ..... 37 25  
      C. D. Jeffries, 1899 ..... 55 75  
Dec. 28—On "McBriar" ..... 50 00  
      On "Puerto Rico" ..... 30 00  
      P. Weber ..... 20 00  
      E. Culver ..... 10 00  
      John Mackey ..... 132 00  
      On "Pete S." ..... 10 00  
      S. C. Tryon & Co. .... 34 00  
      On "Harry J." ..... 10 00  
      C. T. Boots ..... 210 00  
----- \$1,079 45

## FIXED EVENTS.

Occident Stake, 1902 ..... \$800 00  
Occident Stake, 1903 ..... 945 00  
Occident Stake, 1904 ..... 780 00  
Stanford Stake, 1902 ..... 290 00  
Stanford Stake, 1903 ..... 770 00  
Stallion Stake, 1902 ..... 170 00  
Stallion Stake, 1903 ..... 200 00  
Stallion Stake, 1902 (foals) ..... 585 00  
Stallion Stake, 1903 (foals) ..... 200 00  
----- \$4,740 00

## RENT.

Rent of Agricultural Park from James Martin..... 1,629 60  
----- \$81,516 83

## DISBURSEMENTS.

## ADVERTISING.

1901.  
May 13—Allen's Press Clipping Bureau ..... \$5 00  
Sept. 16—F. W. Kelley ..... 345 00  
Oct. 1—Signal Publishing Company ..... 10 00  
      Newcastle News ..... 5 00  
Oct. 30—Western Elk ..... 2 50  
Nov. 2—Willows Promoter ..... 5 00  
      Stockton Mail ..... 15 00  
      San Francisco Call ..... 175 00  
      San Francisco Examiner ..... 150 00  
      San Francisco Chronicle ..... 100 00  
      San Francisco Bulletin ..... 100 00  
      Sacramento Bee ..... 184 08  
      Sacramento Record-Union ..... 287 55  
      Bakersfield Californian ..... 10 00  
      Bakersfield Echo ..... 6 00  
      Sutter Independent ..... 5 00  
      Sutter County Farmer ..... 5 00  
      Antioch Ledger ..... 5 00  
      San Bernardino Times-Index ..... 5 00  
      Ching Champion ..... 5 00  
      Merced Sun ..... 6 00  
      Nevada City Transcript ..... 10 00  
----- \$1,421 13

Amount carried forward..... \$1,421 13

## FINANCIAL STATEMENT.

13

1901.	Amount brought forward .....	\$1,421 13
Nov. 2—	Grass Valley Telegraph .....	7 50
	Grass Valley Union .....	7 50
	Nevada City Herald .....	5 00
	Willows Journal .....	5 00
	Ione Echo .....	5 00
	Amador Ledger .....	6 00
	Amador Dispatch .....	6 00
	San Leandro Reporter .....	7 50
	Livermore Herald .....	7 50
	Santa Ana Leader .....	4 50
	Yreka Journal .....	3 00
	Crescent City News .....	5 00
	Auburn Republican-Argus .....	5 00
	Auburn Placer Herald .....	5 00
	Madera Tribune .....	5 00
	Visalia Times .....	7 50
	Winters Express .....	5 00
	Woodland Democrat .....	6 00
	Woodland Mail .....	6 00
	Davisville Enterprise .....	5 00
	Plumas Independent .....	5 00
	Placerville Mountain Democrat .....	5 00
	Placerville Nugget .....	5 00
	Oroville Register .....	6 00
	Oroville Mercury .....	6 00
	Chico Enterprise .....	6 00
	Modesto News .....	6 00
	Santa Cruz Sentinel .....	6 00
	Fresno Republican .....	15 00
	Fresno Democrat .....	15 00
	Red Bluff Sentinel .....	7 00
	Red Bluff People's Cause .....	5 00
	Red Bluff News .....	7 50
	Petaluma Courier .....	7 50
	Santa Rosa Press-Democrat .....	7 50
	Santa Rosa Republican .....	10 00
	Santa Rosa Sonoma County Farmer .....	8 00
	Marysville Appeal .....	10 00
	Marysville Democrat .....	5 00
	Salinas Index .....	6 00
	Downieville Mountain Messenger .....	6 00
	Stockton Independent .....	15 00
	Stockton Record .....	10 00
	Lodi Sentinel .....	5 00
	Quincy National Bulletin .....	5 00
	Chico Record .....	5 00
	Hollister Bee .....	5 00
	Hollister San Benito Advance .....	5 00
	Hollister Free Lance .....	6 00
	Colusa Sun .....	10 00
	Redding Searchlight .....	5 00
	Redding Free Press .....	5 00
	Napa Journal .....	5 00
	Napa Register .....	5 00
	Vallejo Chronicle .....	10 00
	Dixon Tribune .....	4 00
	Solano Republican .....	7 50
	San José Fanciers' Monthly .....	15 00
	Vacaville Reporter .....	7 50
	Mayfield Republican .....	7 50
	Sacramento Sunday News .....	20 00
	Sacramento Sunday Leader .....	13 00
	Sacramento Nord California Herald .....	5 00
	Galt Gazette .....	10 00
	Los Angeles Herald .....	30 00
	San José Mercury .....	15 00
	Oakland Enquirer .....	20 00
	San Francisco Post .....	50 00
	San Francisco Rural Press .....	30 00
	San Francisco California Fruit-Grower .....	20 00
	San Francisco Butchers and Stockgrowers' Journal .....	5 00
	San Francisco Western Creamery .....	45 00
	Amount carried forward .....	\$2,090 13

1901.	Amount brought forward .....	\$2,060 13
Nov. 2—	Oakland Tribune .....	20 00
	Oak Park Ledger .....	5 00
	Santa Barbara Independent .....	10 00
	San Francisco Dairy and Produce Review .....	7 50
	Pasadena News .....	10 00
	Sacramento Liberdade .....	5 00
	El Dorado Republican .....	5 00
	Berkeley Gazette .....	10 00
	Folsom Telegraph .....	5 00

## BILLS CONTRACTED DURING 1900.

Bakersfield Echo .....	7 50
Visalia Times .....	7 50
Yreka Journal .....	3 00
Santa Rosa Press-Democrat .....	7 50
Quincy National Bulletin .....	5 00

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\$2,198 13

## EXPENSE.

1901.		
Feb. 4—	Postage .....	\$10 00
15—	Sunset Telephone and Telegraph Co. ....	6 20
19—	Postage .....	2 00
Mar. 4—	Capital Telephone and Telegraph Co. ....	3 60
	Mary Hinkson, engrossing diplomas .....	1 50
5—	Wm. McLaughlin, cartage .....	1 50
	Wells, Fargo & Co. ....	40
9—	Postage .....	5 00
11—	Gas tapers .....	20
15—	Wells, Fargo & Co. ....	7 45
29—	Postage .....	5 00
April 15—	Capital Telephone and Telegraph Co. ....	3 60
	P. O. box rent .....	2 50
	Sunset Telephone and Telegraph Co. ....	13 25
	Wm. McLaughlin, cartage .....	4 35
	J. L. Dunn, cash paid in error .....	15 00
May 1—	Postage .....	10 00
	W. K. Cothrin, wood .....	15 25
6—	Capital Telephone and Telegraph Co. ....	3 50
13—	Postage .....	10 00
16—	Mason's Laundry .....	95
21—	Postage .....	5 00
22—	Sunset Telephone and Telegraph Co. ....	7 50
27—	Postage .....	5 00
June 3—	Postage .....	5 00
6—	Wells, Fargo & Co. ....	1 15
	C. Flohr, repairing locks .....	50
7—	Capital Telephone and Telegraph Co. ....	3 50
10—	Sunset Telephone and Telegraph Co. ....	5 50
14—	George Johnson, labor .....	2 50
19—	Christy & Wise, sundries .....	24 15
22—	Capital Gas Co., chimneys .....	15
25—	Postage .....	5 00
	M. R. Beard, experting books .....	30 00
	Capital Gas Co., mantels .....	1 35
July 1—	O. P. Dodge, expenses to San Francisco .....	5 00
1—	Sundries for Directors' meeting .....	5 50
2—	Wells, Fargo & Co. ....	70
	J. E. Kerr, hire of jackscrews .....	8 00
	P. O. box rent .....	2 50
	H. E. Sleeper, rubber stamps .....	1 50
5—	Freeport Telephone Co. ....	50
11—	Capital Telephone and Telegraph Co. ....	3 60
	H. Lowden, expenses securing entries 1900. ....	9 00
15—	Postage .....	15 00
17—	H. E. Sleeper, rubber stamps .....	2 50
18—	Postage .....	30 00
	Sunset Telephone and Telegraph Co. ....	6 80
19—	Subscription to "Thoroughbred Record" .....	2 00
24—	P. M. McGuire, hauling dirt .....	5 50
	R. H. Hawley, notary fee .....	1 00
26—	Postage .....	30 00
	Subscription to Wallace's Yearbook .....	4 25
31—	H. E. Sleeper, making zincotype .....	1 50

Amount carried forward .....	\$352 40	\$2,198 13
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1901.	Amount brought forward .....	\$352 40	\$2,198 13
Aug.	2—Postage .....	5 00	
	3—Wells, Fargo & Co. ....	65	
	City license to sell pools .....	500 00	
	H. Lowden, expenses securing entries .....	21 50	
	9—Capital Telephone and Telegraph Co. ....	3 75	
	Isidor Cohen, cigars .....	8 50	
	10—Postage .....	10 00	
	16—P. O. box key .....	20	
	17—Sunset Telephone and Telegraph Co. ....	10 15	
	17—Postage .....	15 00	
	21—Postage .....	30 00	
	24—W. H. Higbie, cleaning carpets .....	10 55	
	National Trotting Association, dues for 1901 .....	100 00	
	National Trotting Association, commissions .....	15 00	
	26—Postage .....	20 00	
	27—Postage .....	20 00	
	W. H. Higbie, cleaning carpets .....	7 85	
	People's Express, cartage .....	50	
	Postal Telegraph Co. ....	55	
	H. E. Sleeper, rubber stamps .....	2 00	
	29—Mrs. C. B. Herndon, labor on decorations .....	5 00	
	30—Hale Bros & Co., towels .....	2 90	
	31—I. Cohen, cigars .....	8 50	
	Fare for bicycle riders .....	97 00	
	I. Alexander, expenses securing exhibits .....	10 00	
Sept.	2—Hale Bros & Co., sundries .....	3 05	
	5—R. M. Moseley, labor .....	1 45	
	7—E. A. Bridgford, judging cattle .....	20 00	
	10—James Logue, riding race .....	75 00	
	Knights of Pythias, for special Fair attractions .....	250 00	
	Order of Red Men, for special Fair attractions .....	175 00	
	11—Wells, Fargo & Co. ....	25	
	14—I. Alexander, Fair promotion .....	130 00	
	Henry Berrar, judging poultry .....	94 85	
	J. J. Calundann, Morse's Patrol .....	834 30	
	C. H. Porter, music contract .....	1,960 00	
	Mrs. A. M. Pfeiffer, Fair promotion .....	50 00	
	Henry Bennett, blacksmithing .....	75	
	16—D. Dennison, rent of stalls .....	50 00	
	Postage .....	5 00	
	C. A. Fisk, electrical work .....	16 00	
	17—J. G. Genshlea, cigars .....	2 00	
	J. R. Brown, filing F. W. Leavitt complaint .....	2 00	
	John Sparks, freight on cattle .....	119 90	
	Joseph Marzen, freight on cattle .....	203 06	
	S. E. Watson, paid judges on butter .....	20 00	
	S. E. Watson, paid judges on machinery .....	15 00	
	James Martin, whitewashing and work on track .....	1,316 45	
	E. Phillips, soliciting advertising .....	32 50	
	E. Phillips, printing programmes .....	170 85	
	E. Phillips, salary .....	55 00	
	18—I. Cohen, cigars .....	8 50	
	Wells, Fargo & Co. ....	3 75	
	E. W. Culver, livery .....	20 00	
	Mrs. A. Christie, damages .....	50 00	
	Sayre & Son, repairing harness .....	2 50	
	A. O. U. W., for best drilled team .....	50 00	
	H. Lowden, services as handicapper .....	120 00	
	J. H. Campbell, cleaning cesspools .....	30 00	
	P. O. box rent .....	2 50	
	J. Martin, hack hire .....	2 50	
Oct.	1—Exchange .....	30	
	Capital Box Factory, sawdust .....	7 50	
	4—Shasta Water Co. ....	8 10	
	P. McGuire, hauling rubbish .....	5 80	
	L. P. Anderson, painting .....	22 25	
	Tom Scott, plumbing 1900 .....	170 10	
	Shreve & Co., medals 1900 .....	938 00	
	Second Infantry Band, music .....	30 00	
	I. P. Christie, cartage .....	32 00	
	C. T. Barton, refreshments .....	30 00	
	Burnett & Son, millwork .....	47 75	
	Amount carried forward .....	\$8,440 96	\$2,198 13

1901.	Amount brought forward.....	\$8,440 96	\$2,198 13
Oct. 4-	Shreve & Co., medal.....	2 35	
	Sunset Telegraph and Telephone Co.....	9 45	
	C. B. Conn, plumbing.....	7 25	
Oct. 12-	Postage.....	10 00	
	A. J. Wilson, carriage hire.....	34 00	
	First Regiment Militant Band, music.....	138 50	
	Lewis Winter, advertising cut.....	12 00	
16-	James Popert, axle grease.....	50	
18-	Postal Telegraph Co.....	8 35	
22-	Wells, Fargo & Co.....	1 80	
23-	Brighton Milling Co., feed.....	10 85	
	Wyckoff, Seamans & Benedict, rent of typewriter.....	1 25	
	Dietz & Glendenning, posting bills.....	2 20	
	Money order.....	10	
	H. McMillan, teaming at Park.....	178 00	
	Hicks, Judd & Co., printing posters.....	125 00	
29-	Baker & Hamilton, hardware.....	25 82	
	George Z. Wait, disinfectant.....	40 00	
	W. K. Vanderslice & Co., bill for medals for 1899.....	33 55	
	Hoit's Electrical Works, electric lamps.....	9 60	
Nov. 2-	B. Wilson & Co., premium ribbon.....	2 80	
	Holbrook, Merrill & Stetson, hardware.....	8 05	
7-	Mary Hinkson, engrossing diplomas.....	22 00	
	Money order.....	05	
	Capital Telephone Co., use of 'phones.....	11 60	
	Ing & Allee, drugs.....	5 85	
	Postage.....	10 00	
	Mary Hinkson, engrossing diplomas.....	1 00	
25-	Capital Telephone Co., use of 'phones.....	8 55	
	Thomson-Diggs Co., hardware.....	13 75	
	Leroy Anderson, judging premium stock.....	40 00	
27-	James Popert, feed.....	34 85	
	Postage.....	5 00	
Dec. 5-	H. Lowden, securing entries 1899.....	83 50	
6-	Postage.....	10 00	
	Wells, Fargo & Co.....	1 05	
	H. Sleeper, rubber stamps.....	75	
10-	Postage.....	5 00	
18-	Postage.....	6 00	
23-	Capital Telephone Co., use of 'phones.....	3 50	
27-	Klune & Floberg, medal case.....	1 00	
1902.			
Jan. 2-	Postage.....	10 00	
	P. O. box rent.....	2 50	
4-	Wells, Fargo & Co.....	1 25	
9-	C. Flohr, repairing locks.....	35	
	Wells, Fargo & Co.....	5 75	
	Capital Manufacturing Co., window sash, etc.....	43 20	
10-	Tom Scott, plumbing.....	155 00	
	J. A. Lafferty, drayage.....	100 50	
	B. A. Johnson, caring for Directors' stand.....	451 79	
	Melvin & Son, iron rods for Pavilion.....	75 20	
	George Boyne, decorating Pavilion.....	408 14	
	Dr. G. W. Dufficy, medical attendance for injured jockeys.....	162 00	
	George B. Stack, plumbing.....	345 85	
	Fashion Stable, livery hire.....	166 00	
	L. R. Davis, straw for premium stock.....	177 00	
	G. W. Curry, hay for premium stock.....	488 97	
	Wood, Curtis & Co., hay for premium stock.....	235 28	
	Miller & Mathews, barbecue dancing platform.....	250 00	
	C. M. Campbell, repairing chairs and rent on furniture.....	68 15	
	Bosqui Engraving Co., diplomas.....	135 00	
	Shreve & Co., medals.....	115 25	
	S. Dwyer, sundries.....	57 50	
	Dr. G. L. Stevenson, medical attendance.....	50 00	
	Sacramento Electric, Gas, and Railway Co., lights.....	700 00	
	Central California Electric Co., lights.....	225 00	
	Capital Gas Co., gas.....	229 40	
	W. K. Cothrin, wood.....	10 00	
	F. H. Veach, repairing turnstiles.....	30 50	
	California Winery, wines.....	45 75	
	Sunset Telephone Co., use of 'phones.....	34 15	
	Amount carried forward.....	\$14,145 31	\$2,198 13



## FINANCIAL STATEMENT.

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1902.	Amount brought forward.....	\$14,145 31	\$2,198 13
Jan. 10—	John Breuner Co., re-covering lounge.....	31 00	
	Derman & Blundell, gold medal.....	20 00	
	A. S. Hopkins Co., sundries.....	31 40	
	T. D. Sriver, hack hire.....	2 00	
	Sacramento Directory Co., directory.....	4 00	
	George B. Stack, plumbing.....	2 40	
	Kirk-Geary Co., disinfectant.....	11 55	
	D. Johnston & Co.....	12 85	
	R. O. Kimbrough, hardware.....	8 70	
	Egan Bros., repairing filter.....	3 80	
	Hale Bros. & Co., cloth.....	3 50	
	A. A. Killen, painting signs.....	26 50	
	Western Union Telegraph Co., telegrams.....	74 40	
	W. A. Caswell, posting bills.....	27 75	
	W. F. Purnell, office supplies.....	1 40	
	Kane & Trainor Ice Co., ice.....	75 65	
	Wells, Fargo & Co., expressage.....	52	
	H. S. Crocker & Co., office supplies.....	36 70	
	John F. Farley, cigars, 1899.....	12 00	
	Owens, Varney & Green, posting bills.....	27 00	
	Sanborn, Vail & Co., repairing pictures.....	25 65	
	George E. Spencer, posting bills.....	10 00	
	Goodwin Bros., subscription to Official Turf Guide.....	18 00	
	Hevener & Mier, framing pictures.....	55	
	Postage.....	15 00	
	Capital Telephone Co., use of 'phones.....	3 50	
	Phoenix Milling Co., feedstuffs.....	173 67	
	Z. Harris, papers containing statistics for report.....	30	
	Hevener & Mier, framing pictures.....	1 95	
	C. Flohr, repairing locks.....	25	
		<hr/>	\$14,807 30

## 1901. PARK PRELIMINARY PAYROLL, 1901.

Sept. 2—	William Roberts, carpenter.....	\$212 00	
	John Renfro, carpenter.....	156 00	
	Patrick Burns, laborer.....	94 00	
	E. Diggs, laborer.....	68 00	
	Victor Gilbert, laborer.....	8 00	
	R. Frazee, laborer.....	68 00	
	S. Hinton, laborer.....	12 00	
	R. M. Moseley, laborer.....	8 00	
	A. E. Crow, laborer.....	58 00	
	J. McCracken, carpenter.....	12 00	
	J. Emerald, carpenter.....	15 00	
	D. Enright, laborer.....	10 00	
	George Mercer, carpenter.....	13 50	
	Charles Bard, trackman.....	35 00	
	Lee Stout, trackman.....	12 00	
	J. Fitzgerald, trackman.....	12 00	
	C. Langdon, laborer.....	4 00	
	M. Johnson, janitor.....	15 00	
	Ed. Fitzgerald, laborer.....	8 00	
	H. Whitaker, laborer.....	8 00	
		<hr/>	\$828 50

## PARK PAYROLL.

Sept. 14—	William Fieldwick, superintendent of track.....	\$125 00	
	John Renfro, laborer.....	12 00	
	D. Enright, laborer.....	10 00	
	H. Whitaker, laborer.....	10 00	
	William Roberts, carpenter.....	60 00	
	E. Diggs, laborer.....	32 00	
	R. Frazee, laborer.....	49 00	
	E. A. Crow, laborer.....	49 00	
	Patrick Burns, laborer.....	8 00	
	Charles Bard, laborer.....	40 50	
	William Hartman, handler starting-gate.....	30 50	
	M. Johnson, care of stands.....	17 50	
	Lee Stout, laborer.....	28 00	
	John Fitzgerald, laborer.....	28 00	
	Ed. Ferguson, laborer.....	26 00	
	C. Slaughter, laborer.....	24 00	
	C. Yates, laborer.....	8 00	
		<hr/>	\$557 50
	Amount carried forward.....	\$17,833 93	

1901.	Amount brought forward.....	\$557 50	\$17,838 98
Sept. 14—	P. Hardy, laborer .....	7 00	
	F. Norman, laborer .....	7 00	
	G. Lyons, laborer .....	5 00	
	J. L. Dunn, financial secretary .....	150 00	
	C. W. Samuelson, assistant forage clerk .....	21 00	
	E. J. Clark, chief ticket clerk .....	48 00	
	Charles Ellsworth, ticket clerk .....	24 00	
	Julius Jacobs, ticket clerk .....	24 00	
	Thomas Finnegan, ticket clerk .....	22 00	
	L. Handlin, ticket clerk .....	8 00	
	Thomas Flannagan, ticket clerk .....	22 00	
	Ed. Barron, ticket clerk .....	24 00	
	D. J. Long, ticket clerk .....	22 00	
	John Creamer, ticket clerk .....	18 00	
	Fred Chase, entry clerk .....	70 00	
	W. W. Coons, forage clerk .....	48 00	
	C. Samuelson, placing stalls .....	50 00	
	L. J. Chrisler, assistant superintendent .....	75 00	
	H. S. Beals, usher .....	22 00	
	J. M. Shannon, gatekeeper .....	22 00	
	A. Dassonville, gatekeeper .....	22 00	
	Timothy Lynch, gatekeeper .....	27 50	
	Roy Hart, gatekeeper .....	22 00	
	P. Pendergast, gatekeeper .....	22 00	
	John F. Dreman, gatekeeper .....	22 00	
	Morris Haley, watchman .....	12 00	
	Henry Furry, watchman .....	12 00	
	P. O'Harra, watchman .....	22 00	
	E. H. Hoppe, watchman .....	38 00	
	C. Murchison, mounted police .....	20 00	
	T. L. Acocck, watchman .....	12 00	
	F. Kunz, messenger boy .....	22 00	
	C. W. Aby, watching cattle sheds .....	24 00	
	Monroe Johnson, porter judges' stand .....	27 50	
	Tony Gregory, caring for closets .....	22 00	
	M. Karcher, watchman .....	22 00	
	W. K. Miller, hay, day watchman .....	34 00	
	D. Maloney, hay, night watchman .....	32 00	
	Charles Schlutius, mounted police .....	22 00	
	William Napier, gatekeeper .....	33 00	
	D. J. Considine, gatekeeper .....	22 00	
	J. W. Brooks, starter running races .....	220 00	
	P. E. Jones, assistant starter running races .....	55 00	
	W. Dorsey, whipper-in .....	55 00	
	B. Rush, timers' flag .....	27 50	
	E. S. Culver, clerk of course .....	60 00	
	J. Bronner, clerk of scales .....	90 00	
	R. Shields, marshal .....	60 00	
	J. Dinue, assistant marshal .....	55 00	
	A. O. Manning, caring for arm numbers .....	30 00	
	C. Ingham, caring for jockey and blackboards .....	55 00	
	Thomas Halpin, caring for jockey-room .....	51 50	
	James Sullivan, timer .....	44 00	
	J. C. Wolfskill, timer .....	40 00	
	S. McGibbin, overnight programme .....	33 00	
	James Cole, porter .....	22 00	
	W. D. Nichols, special police .....	36 00	
	R. Mosley, laborer .....	3 00	
	William Napier, watchman .....	12 00	
	P. E. Jones, watchman .....	8 00	
	E. H. Hoppe, watchman .....	6 00	
	George J. Johnson, office work .....	35 00	
	Thomas J. Dunn, counting tickets .....	46 00	
			<b>\$2,780 50</b>

## PAVILION PRELIMINARY PAYROLL.

Sept. 2—	D. Falconer, carpenter .....	\$290 50	
	Thomas Twaddle, laborer .....	36 00	
	J. M. Tenbrook, laborer .....	56 50	
	A. Galleoto, laborer .....	55 00	
	A. McDonell, laborer .....	51 50	
	Grove Fink, laborer .....	72 50	
	T. W. Haynie, laborer .....	36 50	
	Amount carried forward .....	\$598 50	\$20,614 43

1901.	Amount brought forward .....	\$598 50	\$20,614 43
Sept. 2—	W. H. H. Willey, laborer .....	54 25	
	A. Latson, laborer .....	26 50	
	George Davis, laborer .....	8 50	
	J. B. Hill, laborer .....	5 50	
	W. S. Cannon, watchman .....	5 00	
	O. Collier, carpenter .....	97 50	
	George Mercer, carpenter .....	7 50	
	Jesse Emerald, carpenter .....	7 50	
	P. Anderson, messenger .....	4 00	
	George A. Warner, laborer .....	10 50	
	E. D. Young, laborer .....	5 00	
	H. Garrett, laborer .....	9 50	
	Theodore Suchau, laborer .....	41 75	
	J. W. Collins, laborer .....	34 25	
	Charles Ott, carpenter .....	34 50	
	George J. Johnson, clerk .....	75 00	
	J. Donnalle, laborer .....	3 50	
	R. Helms, laborer .....	5 00	
	A. Hunter, laborer .....	3 50	
	T. W. Measure, laborer .....	7 00	
	J. H. Dodge, laborer .....	18 00	
	E. G. McCann, laborer .....	12 50	
	O. R. Rush, laborer .....	12 50	
	E. Hubert, laborer .....	38 50	
	William Conley, laborer .....	30 45	
	Sadie Paine, clerk .....	54 00	
			\$1,210 20

## PAVILION PAYROLL.

Sept. 14—	D. Falconer, carpenter .....	\$122 50	
	W. Conley, laborer .....	63 50	
	G. A. Warner, laborer .....	69 00	
	A. McDonell, laborer .....	66 75	
	A. Galleoto, laborer .....	66 50	
	R. Helms, laborer .....	48 25	
	G. Fink, laborer .....	44 85	
	H. Garrett, laborer .....	43 25	
	E. Hubert, laborer .....	69 50	
	A. Latson, laborer .....	45 50	
	G. Davis, laborer .....	33 75	
	W. H. H. Willey, laborer .....	71 50	
	J. W. Collins, laborer .....	62 50	
	S. W. Haynie, laborer .....	46 50	
	J. B. Hill, laborer .....	67 00	
	O. R. Rush, laborer .....	51 00	
	J. M. Tenbrook, laborer .....	66 50	
	Theodore Suchau, laborer .....	65 00	
	E. G. McCann, laborer .....	42 75	
	J. Donnalle, laborer .....	40 25	
	A. Hunter, laborer .....	13 00	
	P. J. Coffey, laborer .....	34 75	
	Charles Cooley, laborer .....	34 50	
	C. V. Garrett, watchman .....	39 00	
	Thomas Jones, laborer .....	2 00	
	J. C. Collins, laborer .....	22 50	
	Julius Jacobs, laborer .....	5 00	
	Timothy Lee, watchman .....	35 00	
	W. S. Canon, watchman .....	58 50	
	Jesse Podd, watchman .....	24 00	
	P. Anderson, messenger .....	19 00	
	P. Mamegowena, labor in Art Department .....	43 50	
	Mrs. A. Quigley, caring for cases .....	49 50	
	Mrs. Lawler, caring for ladies' room .....	22 00	
	Mrs. Chalmers, caring for ladies' room .....	24 00	
	H. W. Gardiner, clerk .....	6 00	
	John Creamer, clerk .....	21 00	
	C. M. Prodder, ticket clerk .....	33 00	
	Ira Jones, ticket clerk .....	33 00	
	Mrs. A. R. Fink, entry clerk .....	48 00	
	Mrs. E. G. Clark, entry clerk .....	48 00	
	Mrs. A. Chipman, entry clerk .....	51 00	
	Charles Trainor, chief ticket clerk .....	44 00	

Amount carried forward ..... \$1,896 60 \$21,824 63

1901.	Amount brought forward.....	\$1,896 60	\$21,824 63
Sept. 14	Charles Trainor, procuring exhibits.....	20 00	
	John A. Stanton, Superintendent of Art Department.....	200 00	
	S. E. Watson, Superintendent of Dairy Department.....	200 00	
	J. F. Bronner, office work.....	10 00	
	O. P. Dodge, Superintendent of Pavilion.....	150 00	
	Sadie Paine, assistant financial secretary.....	39 00	
	George J. Johnson, office work.....	15 00	
	Katie Haley, clerk.....	18 00	
	M. Coffey, Superintendent of Poultry Department.....	30 00	
			\$2,578 60

## RACES, 1901.

Race	1—The Occident Stake.....	\$2,595 00	
	2—Pacing purse, 2:12 class.....	500 00	
	3—Running purse.....	225 00	
	4—Running purse.....	250 00	
	5—Running purse.....	225 00	
	6—Running purse.....	225 00	
	7—Pacing purse, 2:20 class.....	500 00	
	8—Trotting purse, 2:40 class.....	800 00	
	9—Running purse.....	225 00	
	10—Flash Stake.....	670 00	
	11—Running purse.....	250 00	
	12—Running purse.....	225 00	
	13—Pacing stake, 3-year-olds.....	360 00	
	14—Pacing purse, 2:18 class.....	400 00	
	15—Running purse.....	225 00	
	16—Shafter Selling Stake.....	590 00	
	17—Running purse.....	250 00	
	18—Running purse.....	225 00	
	19—Sacramento Driving Club road race.....	400 00	
	20—Trotting purse, 2:14 class.....	1,000 00	
	21—Running purse.....	250 00	
	22—Sacramento State Fair Stake.....	630 00	
	23—Running purse.....	250 00	
	24—Running purse.....	200 00	
	25—Trotting purse, 2:20 class.....	800 00	
	26—Drummers' race.....	250 00	
	27—Running purse.....	225 00	
	28—Running purse.....	225 00	
	29—Running purse.....	225 00	
	30—Running purse.....	225 00	
	31—Pacing purse, 2:17 class.....	800 00	
	32—Running purse.....	250 00	
	32A—Running purse.....	225 00	
	33—Victor Stake.....	650 00	
	34—Futurity Stake.....	2,250 00	
	34A—Running purse.....	200 00	
	35—Running purse.....	250 00	
	36—Stanford Stake.....	1,260 00	
	37—Trotting purse, special.....	400 00	
	38—Running purse.....	250 00	
	39—Running purse.....	250 00	
	40—Running purse.....	225 00	
	41—Running purse.....	225 00	
	42—Trotting purse, 2:15 class, special.....	400 00	
	43—Sacramento road race, special.....	400 00	
	44—Running purse.....	225 00	
	45—Running purse.....	225 00	
	46—Running purse, special.....	400 00	
	47—Running purse.....	225 00	
	47A—Running purse.....	200 00	
	48—Pacing purse, 2:25 class.....	800 00	
	49—Trotting purse, 2:24 class.....	500 00	
	50—Running purse.....	225 00	
	51—Running purse.....	225 00	
	52—Running purse.....	250 00	
	53—Running purse.....	225 00	
	54—Pacing purse, 2:13 class.....	1,000 00	
	55—Pacing purse, special.....	400 00	
	56—Running purse.....	225 00	
	57—Sunny Slope Stake.....	520 00	
	Amount brought forward.....	\$27,100 00	\$24,403 23

	Amount brought forward .....	\$27,100 00	\$24,403 23
Race	57A—Running purse, handicap .....	225 00	
	58—Governor's Handicap .....	680 00	
	59—High weight handicap .....	250 00	
	59A—Running purse .....	200 00	
	60—Trotting purse, special .....	400 00	
	61—Pacing purse, special .....	400 00	
	62—Running purse .....	225 00	
	63—Running purse .....	250 00	
	64—Running purse .....	200 00	
	65—Running purse .....	225 00	
	65A—Running purse .....	200 00	
			\$30,355 00

## PREMIUMS.

First Department .....	\$3,750 50	
Poultry .....	622 00	
Second Department .....	298 00	
Third Department .....	330 75	
Fourth Department .....	453 50	
Fifth Department .....	481 00	
Sixth Department .....	1,232 00	
Seventh Department .....	77 60	
Eighth Department .....	859 00	
Ninth Department .....	870 00	
		\$8,974 25

## ENTRANCES DUES.

	National Trotting Association (S. C. Tryon) .....	\$175 00	
Race	7—"Nellie I." .....	25 00	
	8—"Pearl K." .....	40 00	
	10—"Moccrito" .....	10 00	
	10—"Roundhead" .....	10 00	
	10—"Doublet" .....	10 00	
	13—"Pearl Sinclair" .....	20 00	
	16—"Sol" .....	10 00	
	16—"Maraschino" .....	10 00	
	20—"McBriar" .....	50 00	
	20—"G. W. McKinney" .....	50 00	
	22—"Rio Chico" .....	10 00	
	22—"Jim Hale" .....	10 00	
	32—"Advertisor" .....	40 00	
	31—"Nellie I." .....	40 00	
	31—"Little Maid" .....	40 00	
	34—Elmwood Stock Farm .....	185 00	
	36—J. Rea .....	10 00	
	36—L. McCullum .....	10 00	
	48—"Celmar" .....	40 00	
	48—"Advertisor" .....	40 00	
	40—"Nellie I." .....	40 00	
	54—"King Cadenza" .....	50 00	
	54—"Nellie I." .....	50 00	
	54—"Advertisor" .....	50 00	
			\$1,025 00

## SALARIES.

George W. Jackson, Secretary .....	\$1,400 00	
H. Lowden, Assistant Secretary .....	1,500 00	
Leon R. Miller, Stenographer .....	720 00	
Charles B. Herndon, Janitor .....	900 00	
D. M. Cox, Watchman .....	600 00	
		\$5,120 00

## BILLS PAYABLE.

James Touhey .....	\$702 00	
George Boyne .....	415 00	
W. F. Frazer .....	986 35	
A. K. Wackman .....	192 57	
Central California Electric Co. ....	235 25	
Meiss Bros. ....	194 50	
Friend & Terry Lumber Co. ....	296 40	
J. W. Wilson .....	205 00	
A. Meister & Sons .....	154 05	
John Mackey .....	250 00	

Amount brought forward ..... \$3,631 12 \$69,877 48

Amount brought forward.....	\$3,631 12	\$69,877 48
J. Lafferty.....	112 50	
Tom Scott.....	170 10	
Grafmiller Bros.....	126 48	
Hale Bros. & Co.....	165 04	
Sacramento Electric, Gas, and Railway Co.....	716 64	
Brighton Milling Co.....	143 64	
California State Bank.....	213 00	
Capital Gas Co.....	268 46	
C. H. Krebs & Co.....	161 45	
Shreve & Co.....	938 00	
George B. Stack.....	874 03	
		<u>\$7,520 46</u>

## BUILDING AND IMPROVEMENT.

Friend & Terry Lumber Co.....	\$520 25	
Schaw, Ingram, Batchelor & Co.....	582 84	
C. H. Krebs & Co.....	307 60	
Miller Bros.....	140 00	
Herndon & Haley.....	55 00	
T. J. Pennish.....	27 00	
		<u>\$1,632 69</u>

## INTEREST.

June 27—California State Bank.....	\$213 30	
Sept. 10—D. O. Mills, on James Touhey note.....	31 59	
D. O. Mills, on George Boyne note.....	20 75	
D. O. Mills, on sundry notes.....	2,443 00	
Oct. 10—Shreve & Co., on note.....	42 21	
George B. Stack, on note.....	43 70	
1902.		
Jan. 1—California State Bank.....	213 30	
31—D. O. Mills & Co.....	255 37	
		<u>\$3,263 22</u>

## INSURANCE.

Wright & Kimbrough.....	\$63 60	
Frank Hickman.....	69 60	
H. J. Goethe.....	44 65	
W. P. Coleman Company.....	154 05	
Farady & Co.....	42 40	
Hawk & Carly.....	85 00	
Wiseman & Wulff.....	63 70	
Hawley, Bohl & Phillips.....	37 20	
Curtis, Carmichael & Brand.....	97 55	
		<u>\$657 75</u>

## PARK AND PAVILION REBATES.

Cæsar Young, rebate on pool privilege.....	\$1,458 75	
C. T. Barton, rebate on refreshment privilege.....	42 00	
		<u>\$1,500 75</u>

## RENT REBATE.

James Martin.....	250 00	
		<u>\$4,702 35</u>

# PREMIUMS AWARDED—1901.

## FIRST DEPARTMENT—LIVE STOCK.

### HORSES.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—THOROUGHBRED HORSES.</b>		
<i>Stallions.</i>		
First Tenor, best four years old and over.....	Burns & Waterhouse, San Fran....	\$30 00
Thornhill, second best.....	Lone Stable, Sacramento.....	15 00
Impressario, best three-year-old.....	Mrs. E. F. Smith, Sacramento.....	10 00
Discovery, best two-year-old.....	Lone Stable, Sacramento.....	15 00
George Clark, second best.....	Mrs. E. F. Smith, Sacramento.....	7 50
—, best one-year-old.....	Lone Stable, Sacramento.....	10 00
—, second best.....	E. D. McSweeney, El Monte.....	5 00
—, best colt under one year.....	La Siesta Ranch, San José.....	7 50
—, second best.....	Lone Stable, Sacramento.....	5 00
<i>Mares.</i>		
Imp. Elise, best four years old and over, with colt.....	Lone Stable, Sacramento.....	30 00
Wandering Nun and colt, second best.....	La Siesta Ranch, San José.....	15 00
Dame Margery, best four years old and over —, best three-year-old.....	Lone Stable, Sacramento.....	20 00
Nonic, best two-year-old.....	E. D. McSweeney, El Monte.....	7 50
Conch, second best.....	E. D. McSweeney, El Monte.....	10 00
—, best one-year-old.....	Lone Stable, Sacramento.....	5 00
—, second best.....	Lone Stable, Sacramento.....	7 50
—, best filly under one year.....	E. D. McSweeney, Sacramento.....	5 00
—, second best.....	Lone Stable, Sacramento.....	7 50
	E. D. Purser, Sacramento.....	5 00
<i>Families.</i>		
Wandering Nun and two colts, best thoroughbred dam.....	La Siesta Ranch, San José.....	30 00
Abbie Woodnut and two colts, best dam other than thoroughbred.....	Mrs. E. W. Callendine, Sac'to.....	30 00
<b>CLASS II—STANDARD TROTTERS.</b>		
<i>Stallions.</i>		
Boodle Jr., best four years old and over.....	Jesse D. Carr, Salinas.....	30 00
On Stanley, second best.....	Santa Rosa Stock Farm, Santa Rosa.....	15 00
Zuomi, best two-year-old.....	Tuttle Bros., Rocklin.....	15 00
Prince Rio, second best.....	J. B. Iverson, Salinas.....	7 50
The Jester, best one-year-old.....	L. H. Todhunter, Sacramento.....	10 00
Guymot, second best.....	Mrs. E. W. Callendine, Sac'to.....	5 00
Prince Howard, best gelding.....	E. P. Heald, San Francisco.....	10 00
<i>Mares.</i>		
Mary Lou, best four years old and over, with colt.....	Mrs. N. E. McCord, Sacramento.....	15 00
Abbie Woodnut, best four years old and over.....	Mrs. E. W. Callendine, Sac'to.....	20 00
Lady Bellisle, second best.....	La Siesta Ranch, San José.....	10 00
Lady Keating, best three-year-old.....	Mrs. E. W. Callendine, Sac'to.....	15 00
Zaza, best suckling colt.....	Mrs. N. E. McCord, Sacramento.....	5 00

## FIRST DEPARTMENT—HORSES—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS III—ROADSTERS.</b>		
Don C, best roadster gelding.....	Mrs. Frank Tryon, Sacramento...	\$20 00
Doc, second best.....	Young & Co., Sacramento.....	10 00
Maud, best roadster mare, four years old and over.....	W. H. Sayre, Sacramento.....	20 00
<b>CLASS IV—COACH HORSES.</b>		
<i>Stallions.</i>		
Dametal II, best four years old and over...	Dr. J. J. Summerfield, Santa Rosa...	30 00
Y. Adonis, second best.....	W. A. French, Stockton.....	15 00
Boxwood, Jr., best three-year-old.....	H. S. Moddison, Broderick.....	20 00
Lynwood, second best.....	H. H. Wilson, Marysville.....	10 00
General, best two-year-old.....	H. S. Moddison, Broderick.....	15 00
Just in Time, second best.....	H. H. Wilson, Marysville.....	7 50
On Time, best one-year-old.....	H. H. Wilson, Marysville.....	10 00
Young Wonder, second best.....	H. S. Moddison, Broderick.....	5 00
—, best suckling colt.....	Dr. J. J. Summerfield, Santa Rosa.....	7 50
—, second best.....	H. H. Wilson, Marysville.....	5 00
Lyman, best gelding.....	Henry Klemp, Pleasant Grove.....	5 00
<i>Mares.</i>		
Fannie, best four years old and over, with colt.....	H. H. Wilson, Marysville.....	30 00
Maud and colt, second best.....	Dr. J. J. Summerfield, Santa Rosa.....	15 00
Maud, best four years old and over.....	A. D. Miller, Sacramento.....	20 00
Josie, second best.....	H. S. Moddison, Broderick.....	10 00
Lilly, best three-year-old.....	H. H. Wilson, Marysville.....	15 00
Belle, second best.....	H. S. Moddison, Broderick.....	7 50
Maud, best two-year-old.....	T. A. Nuffer, Sonoma.....	10 00
Pet, second best.....	H. H. Wilson, Marysville.....	5 00
Susie, best one-year-old.....	H. S. Moddison, Broderick.....	7 50
Daisy, second best.....	H. H. Wilson, Marysville.....	5 00
—, best suckling filly.....	H. H. Wilson, Marysville.....	7 50
—, second best.....	H. S. Moddison, Broderick.....	5 00
<b>CLASS V—CARRIAGE TEAMS.</b>		
Best span.....	Dr. A. McCollum, Sacramento.....	40 00
Second best.....	Henry Klemp, Pleasant Grove.....	20 00
<b>CLASS VI—ROADSTER TEAMS.</b>		
Best span.....	R. E. Mulcahy, Sacramento.....	30 00
Second best.....	Henry Klemp, Pleasant Grove.....	15 00
<b>CLASS VI A—FANCY TRAPS, PHAETONS, CARTS, OR SIMILAR VEHICLES.</b>		
Best trap.....	Mrs. H. O. Buckman, Sacramento.....	15 00
Second best.....	Harris & Cook, Sacramento.....	10 00
<b>CLASS VII—NORMANS OR PERCHERONS.</b>		
<i>Stallions.</i>		
Hercules, best four years old and over....	Minnewawa Stock Farm, Fresno...	30 00
Laguna, second best.....	J. A. Beall, Laton.....	15 00
—, best suckling colt.....	J. A. Beall, Laton.....	5 00
<i>Mares.</i>		
Isabella, best four years old and over, with colt.....	Minnewawa Stock Farm, Fresno...	30 00
Laura and colt, second best.....	J. A. Beall, Laton.....	15 00
—, best suckling filly.....	Minnewawa Stock Farm, Fresno...	5 00



## FIRST DEPARTMENT—HORSES—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS X—ENGLISH SHIRES.</b>		
<i>Stallions.</i>		
Pride of the Prairie, best four years old and over .....	Meek Estate, Haywards .....	\$30 00
California Tom, second best .....	Dr. J. J. Summerfield, Santa Rosa .....	15 00
<b>CLASS XI—MISCELLANEOUS.</b>		
<i>Stallions.</i>		
Pompeii, Jr., best four years old and over .....	L. M. Ladd, Hollister .....	30 00
Honest John, second best .....	Dr. J. H. Shirley, Sacramento .....	15 00
Pluto, best three-year-old .....	Meek Estate, Haywards .....	20 00
Silver Cloud, second best .....	P. Carroll, Mayhews .....	10 00
Shamrock, best two-year-old .....	Meek Estate, Haywards .....	15 00
Concord, second best .....	Joseph Kiser, Napa .....	7 50
Bay Prince, best one-year-old .....	Joseph Kiser, Napa .....	10 00
Prince S., second best .....	T. A. Nufer, Sonoma .....	5 00
—, best suckling colt .....	Joseph Kiser, Napa .....	7 50
—, second best .....	J. A. Beall, Laton .....	5 00
<i>Mares.</i>		
Martha, best four years old and over, with colt .....	Minnewawa Stock Farm, Fresno .....	30 00
Lize and colt, second best .....	Henry Klemp, Pleasant Grove .....	15 00
Lize, best four years old and over .....	Henry Klemp, Pleasant Grove .....	20 00
Dappy, second best .....	La Siesta Ranch, San José .....	10 00
Sadie, best three-year-old .....	H. H. Wilson, Marysville .....	15 00
Jane, second best .....	H. S. Moddison, Broderick .....	7 50
Annie, best two-year-old .....	P. Carroll, Mayhews .....	10 00
Mary, best one-year-old .....	Joseph Kiser, Napa .....	7 50
Sallie, second best .....	H. S. Moddison, Broderick .....	5 00
—, best suckling filly .....	Minnewawa Stock Farm, Fresno .....	7 50
—, second best .....	Henry Klemp, Pleasant Grove .....	5 00
<b>CLASS XII—SADDLE HORSES.</b>		
—, best saddle horse .....	E. E. Maxwell, Sacramento .....	20 00
—, second best .....	Henry Klemp, Pleasant Grove .....	10 00
<b>CLASS XIV—JACKS AND JENNIES.</b>		
<i>Jacks.</i>		
Sampson, best three years old and over .....	Henry Klemp, Pleasant Grove .....	20 00
Prince, second best .....	H. H. Wilson, Marysville .....	10 00
Jackie, best suckling .....	Henry Klemp, Pleasant Grove .....	5 00
<i>Jennies.</i>		
Sallie, best three years old and over .....	Henry Klemp, Pleasant Grove .....	15 00
Mollie, second best .....	H. H. Wilson, Marysville .....	5 00
<i>Mules.</i>		
Best matched span, three years old and over, California bred .....	Henry Klemp, Pleasant Grove .....	15 00
Best two-year-old .....	Henry Klemp, Pleasant Grove .....	5 00
Best suckling .....	Henry Klemp, Pleasant Grove .....	5 00

## CATTLE.

<b>CLASS I—SHORTHORNS.</b>		
<i>Bulls.</i>		
Sharon Victor VI, best three years old and over .....	Joseph Marzen, Lovelock, Nev. ..	\$30 00
Block, second best .....	W. B. Gibson, Woodland .....	15 00
W. J. Bryan, best two-year-old .....	W. B. Gibson, Woodland .....	10 00
Nevada Boy XXXIX, best one-year-old .....	Joseph Marzen, Lovelock, Nev. ..	15 00
Humboldt Victor V, second best .....	Joseph Marzen, Lovelock, Nev. ..	7 50
Humboldt Victor XIII, best bull calf .....	Joseph Marzen, Lovelock, Nev. ..	10 00
King Spicy X, second best .....	W. H. Howard, Newman .....	5 00

## FIRST DEPARTMENT—CATTLE—Continued.

Exhibit.	Exhibitor.	Award.
<i>Cows.</i>		
Lady Elgin IV, best three years old and over .....	Joseph Marzen, Lovelock, Nev. ....	\$30 00
Sharon Rose of Maple Hill, second best .....	Joseph Marzen, Lovelock, Nev. ....	15 00
Humboldt Maid VI, best two-year-old .....	Joseph Marzen, Lovelock, Nev. ....	20 00
Lassie, second best .....	W. B. Gibson, Woodland .....	10 00
Amelia B David XVIII, best one-year-old .....	Joseph Marzen, Lovelock, Nev. ....	7 50
Belle of Woodland II, best heifer calf .....	W. B. Gibson, Woodland .....	10 00
Waterfall IX, second best .....	Joseph Marzen, Lovelock, Nev. ....	5 00
<i>Herd.</i>		
Sharon Victor VI and four cows, best herd over two years .....	Joseph Marzen, Lovelock, Nev. ....	40 00
<i>Sweepstakes.</i>		
Sharon Victor VI, best bull any age .....	Joseph Marzen, Lovelock, Nev. ....	48 00
Duchess of Humboldt VIII, best cow any age .....	Joseph Marzen, Lovelock, Nev. ....	48 00
CLASS III—HEREFORDS.		
<i>Bulls.</i>		
McCord, best three years old and over .....	John Sparks, Reno, Nev. ....	30 00
The Grove, second best .....	John Sparks, Reno, Nev. ....	20 00
Perfection, best one-year-old .....	John Sparks, Reno, Nev. ....	15 00
<i>Cows.</i>		
Ida May, best three years old and over .....	John Sparks, Reno, Nev. ....	30 00
Ethel Alamo, best two-year-old .....	John Sparks, Reno, Nev. ....	20 00
Phoebe Alamo, best one-year-old .....	John Sparks, Reno, Nev. ....	10 00
Fairview Alamo, best heifer calf .....	John Sparks, Reno, Nev. ....	10 00
<i>Herd.</i>		
McCord and four cows, best herd two years old and over .....	John Sparks, Reno, Nev. ....	40 00
Perfection II and four cows, best herd under two years .....	John Sparks, Reno, Nev. ....	20 00
<i>Sweepstakes.</i>		
Perfection II, best bull any age .....	John Sparks, Reno, Nev. ....	44 00
Ida May, best cow any age .....	John Sparks, Reno, Nev. ....	44 00
CLASS VI—HOLSTEINS.		
<i>Bulls.</i>		
Mechthildus, best three years old and over .....	F. H. Burke, San José .....	30 00
Accula II Netherland, best two-year-old .....	F. H. Burke, San José .....	10 00
Portland King II, best one-year-old .....	F. H. Burke, San José .....	7 50
Mabel Haskin's 3rd Emperor, best bull calf .....	F. H. Burke, San José .....	5 00
<i>Cows.</i>		
Buttercup De Kol, best three years old and over .....	F. H. Burke, San José .....	15 00
Maid Gerben, best two-year-old .....	F. H. Burke, San José .....	10 00
Lill De Kol, best one-year-old .....	F. H. Burke, San José .....	7 50
—, best heifer calf .....	F. H. Burke, San José .....	5 00
<i>Herd.</i>		
Mechthildus and four cows, best herd two years old and over .....	F. H. Burke, San José .....	20 00
Capt. Pietertly and four cows, best herd under two years .....	F. H. Burke, San José .....	10 00
Mabel Haskin's 3rd Emperor and four females, best calf herd .....	F. H. Burke, San José .....	Sil. Med.
<i>Sweepstakes.</i>		
Mechthildus, best bull any age .....	F. H. Burke, San José .....	44 00
Queen of La Siesta, best cow any age .....	F. H. Burke, San José .....	4 00

FIRST DEPARTMENT—CATTLE—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS VII—JERSEYS.</b>		
<i>Bulls.</i>		
Panwood of Y. B., best three years old and over .....	Henry Pierce, San Francisco .....	\$30 00
Peter Shields, second best .....	Thomas Waite, Perkins .....	15 00
Mentone of Y. B., best two-year-old .....	Peter J. Shields, Sacramento .....	20 00
Fidelity of Y. B., second best .....	Henry Pierce, San Francisco .....	10 00
Napa Boy, best one-year-old .....	Thomas Waite, Perkins .....	15 00
El Bravo of Y. B., second best .....	Henry Pierce, San Francisco .....	7 50
Duke Onyx, best bull calf .....	C. V. Osborn, Elk Grove .....	10 00
San Luis of Y. B., second best .....	Henry Pierce, San Francisco .....	5 00
<i>Cows.</i>		
Oleta's Alphae, best three years old and over .....	Peter J. Shields, Sacramento .....	30 00
Camanite, second best .....	Peter J. Shields, Sacramento .....	15 00
Pedro's Prudence, best two-year-old .....	Peter J. Shields, Sacramento .....	20 00
Grau, second best .....	Thomas Waite, Perkins .....	10 00
Eye of Y. B., best one-year-old .....	Henry Pierce, San Francisco .....	15 00
Little Lucy, second best .....	Thomas Waite, Perkins .....	7 50
Lizette of Y. B., best heifer calf .....	Henry Pierce, San Francisco .....	10 00
El Nido of Y. B., second best .....	Henry Pierce, San Francisco .....	5 00
<i>Herd.</i>		
Mentone of Y. B. and four cows, best herd two years old and over .....	Peter J. Shields, Sacramento .....	40 00
Ogibway of Y. B. and four cows, best herd under two years .....	Henry Pierce, San Francisco .....	20 00
Toronto of Y. B. and four calves, best calf herd .....	Henry Pierce, San Francisco .....	Sil. Med.
<i>Sweepstakes.</i>		
Panwood of Y. B., best bull any age .....	Henry Pierce, San Francisco .....	52 00
Oleta's Alphae, best cow any age .....	Peter J. Shields, Sacramento .....	80 00
<b>CLASS VIII—HERD SWEEPSTAKES FOR BEEF BREEDS.</b>		
McCord and four cows, best herd .....	John Sparks, Reno, Nev. ....	90 00
<b>CLASS IX—GRAND SWEEPSTAKES FOR BEEF BREEDS.</b>		
<i>Bulls.</i>		
Sharon Victor VI, best three years old and over .....	Joseph Marzen, Lovelock, Nev. ....	36 00
The Grove I, best two-year-old .....	John Sparks, Reno, Nev. ....	2 00
Perfection II, best one-year-old .....	John Sparks, Reno, Nev. ....	18 00
Humboldt Victor XIII, best calf .....	Joseph Marzen, Lovelock, Nev. ....	1 00
<i>Cows.</i>		
Ida May, best three years old and over .....	John Sparks, Reno, Nev. ....	36 00
Pandora V, best two-year-old .....	John Sparks, Reno, Nev. ....	24 00
Phoebe Alamo, best one-year-old .....	John Sparks, Reno, Nev. ....	1 50
Fairview Alamo, best calf .....	John Sparks, Reno, Nev. ....	1 00
<b>SPECIAL.</b>		
Humboldt Victor, yearling bull .....	Jos. Marzen, Lovelock .. Hon. Men. &	Dip.
Duchess of Humboldt VIII, three-year-old cow .....	Jos. Marzen, Lovelock .. Hon. Men. &	Dip.

## SHEEP.

Exhibit.	Exhibitor.	Award.
<b>CLASS II—FRENCH MÉRINO.</b>		
Best ram, two years old and over .....	J. H. Glide, Sacramento .....	\$10 00
Best ram, one year old .....	J. H. Glide, Sacramento .....	7 50
Best three ram lambs .....	J. H. Glide, Sacramento .....	10 00
Best pen of five ewes, two years old .....	J. H. Glide, Sacramento .....	10 00
Best pen of five ewes, one year old .....	J. H. Glide, Sacramento .....	10 00
Best pen of five ewe lambs .....	J. H. Glide, Sacramento .....	10 00
Best ram and five of his lambs .....	J. H. Glide, Sacramento .....	10 00
<b>CLASS VII—SHROPSHIRE.</b>		
Best ram, any age .....	J. H. Glide, Sacramento .....	10 00
Best pen of five ewes .....	J. H. Glide, Sacramento .....	10 00
Best ram and five of his lambs .....	J. H. Glide, Sacramento .....	10 00
Best three ram lambs .....	J. H. Glide, Sacramento .....	7 50
Best pen of five ewe lambs .....	J. H. Glide, Sacramento .....	7 50
<b>CLASS III—SOUTHDOWNS.</b>		
Best ram, any age .....	George Bement, East Oakland ...	20 00
Second best .....	Thomas Waite, Perkins .....	10 00
Best pen of five ewes .....	Thomas Waite, Perkins .....	20 00
Second best .....	George Bement, East Oakland ...	10 00
Best ram and five of his lambs .....	George Bement, East Oakland ...	20 00
Second best .....	Thomas Waite, Perkins .....	10 00
<b>CLASS IV—DORSET HORNS.</b>		
Best ram, any age .....	S. B. Wright, Santa Rosa .....	10 00
Best pen of five ewes .....	S. B. Wright, Santa Rosa .....	10 00
<b>CLASS V—PERSIAN.</b>		
Best ram, any age .....	C. P. Bailey, San José .....	10 00
Best pen of five ewes .....	C. P. Bailey, San José .....	10 00
Best ram and five lambs .....	C. P. Bailey, San José .....	10 00
<b>SWEEPSTAKES.</b>		
Best French Merino ram and five of his lambs .....	J. H. Glide, Sacramento .....	2 00
Best Shropshire ram and five of his lambs .....	J. H. Glide, Sacramento .....	2 00

## ANGORA GOATS.

<b>THOROUGHBREDS.</b>		
Best buck, two years old and over .....	C. P. Bailey, San José .....	\$15 00
Second best .....	C. E. Bailey, San José .....	7 50
Best buck under two years .....	C. E. Bailey, San José .....	10 00
Second best .....	C. P. Bailey, San José .....	5 00
Best pen of three does, two years old and over .....	C. E. Bailey, San José .....	15 00
Second best .....	C. P. Bailey, San José .....	7 50
Best pen of three does, under two years .....	C. P. Bailey, San José .....	10 00
Second best .....	C. E. Bailey, San José .....	5 00
<b>GRADED.</b>		
Best pen of three, two years old and over .....	C. E. Bailey, San José .....	5 00
<b>HERDS.</b>		
Best herd of ten, any age or breed .....	C. P. Bailey, San José .....	25 00
Second best .....	C. E. Bailey, San José .....	10 00

## SWINE.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—BERKSHIRE.</b>		
<i>Boars.</i>		
Artful Lee, best two years old and over.....	S. B. Wright, Santa Rosa.....	\$20 00
Columbus Duke, second best.....	Thomas Waite, Perkins.....	10 00
Star Baron, best one-year-old.....	S. B. Wright, Santa Rosa.....	15 00
Baron Lynwood, second best.....	Sessions & Co., Los Angeles.....	7 50
Baron Metcalf, best six months old.....	Sessions & Co., Los Angeles.....	10 00
Columbus Duke V, second best.....	S. B. Wright, Santa Rosa.....	5 00
Kingmaker II, best under six months.....	S. B. Wright, Santa Rosa.....	7 50
Lynwood Bachelor, second best.....	Sessions & Co., Los Angeles.....	5 00
<i>Sows.</i>		
Miss Platsburg III, best breeding sow two years old and over.....	S. B. Wright, Santa Rosa.....	20 00
Moline, second best.....	Chas. C. Perkins, Sacramento.....	10 00
Lady Gentry, best one year old and under two.....	Thomas Waite, Perkins.....	15 00
Miss Platsburg VIII, second best.....	S. B. Wright, Santa Rosa.....	7 50
Rose W., best six months old and under one year.....	Thomas Waite, Perkins.....	10 00
Artful Empress, second best.....	S. B. Wright, Santa Rosa.....	5 00
Lynwood Belle, best under six months.....	Sessions & Co., Los Angeles.....	7 50
Los Angeles II, second best.....	S. B. Wright, Santa Rosa.....	5 00
Miss Platsburg and four pigs, best sow and four pigs under six months.....	S. B. Wright, Santa Rosa.....	20 00
Cora Metcalf and six pigs, second best.....	Sessions & Co., Los Angeles.....	10 00
<i>Sweepstakes.</i>		
Star Baron, best boar any age.....	S. B. Wright, Santa Rosa.....	28 00
Miss Platsburg III, best sow any age.....	S. B. Wright, Santa Rosa.....	28 00
Artful Lee and three sows, best boar and three sows over one year.....	S. B. Wright, Santa Rosa.....	24 00
Best four swine, get of one boar.....	S. B. Wright, Santa Rosa.....	2 00
Best pen of six pigs under six months.....	S. B. Wright, Santa Rosa.....	18 00
<b>CLASS II—ESSEX.</b>		
<i>Boars.</i>		
Ohio Major, best two years old and over.....	George Bement, East Oakland.....	10 00
—, best six months old.....	George Bement, East Oakland.....	5 00
—, best under six months.....	George Bement, East Oakland.....	5 00
<i>Sows.</i>		
Black Bessie, best two years old and over.....	George Bement, East Oakland.....	10 00
Squallor, best one-year-old.....	George Bement, East Oakland.....	7 50
Victoria, best six months old.....	George Bement, East Oakland.....	5 00
Lady Maud, best under six months.....	George Bement, East Oakland.....	5 00
California Duchess and four pigs, best sow and four pigs.....	George Bement, East Oakland.....	10 00
<i>Sweepstakes.</i>		
Ohio Major, best boar any age.....	George Bement, East Oakland.....	2 00
Squallor, best sow any age.....	George Bement, East Oakland.....	4 00
Ohio Major and three sows, best boar and three sows.....	George Bement, East Oakland.....	2 00
Best four swine, the get of one boar.....	George Bement, East Oakland.....	2 00
Best pen of six pigs, under six months.....	George Bement, East Oakland.....	1 50
<b>CLASS III—POLAND-CHINA.</b>		
<i>Boars.</i>		
Tecumseh Perfection, best two years old and over.....	S. P. Lindgren & Sons, Kingsburg.....	20 00
Buckeye Boy, second best.....	W. R. McCaslin, El Monte.....	10 00
Chief Perfection V, best one-year-old.....	S. P. Lindgren & Sons, Kingsburg.....	15 00
Ideal Chief, second best.....	Sessions & Co., Los Angeles.....	7 50
Gold Sun, best six months old.....	Sessions & Co., Los Angeles.....	10 00
Best Tecumseh, second best.....	S. P. Lindgren & Sons, Kingsburg.....	5 00
—, best under six months.....	S. P. Lindgren & Sons, Kingsburg.....	7 50
—, second best.....	Sessions & Co., Los Angeles.....	5 00

## FIRST DEPARTMENT—SWINE—Continued.

Exhibit.	Exhibitor.	Award.
<i>Sows.</i>		
Midnight, best two years old and over .....	W. R. McCaslin, El Monte .....	\$20 00
Lynmont Queen, second best .....	Sessions & Co., Los Angeles .....	10 00
Iowa Sunrise, best one-year-old .....	S. P. Lindgren & Sons, Kingsburg .....	15 00
Grand Tecumseh, second best .....	S. P. Lindgren & Sons, Kingsburg .....	7 50
Little Inez, best six months old .....	Sessions & Co., Los Angeles .....	10 00
Wilkes Tecumseh, second best .....	S. P. Lindgren & Sons, Kingsburg .....	5 00
—, best sow pig under six months .....	S. P. Lindgren & Sons, Kingsburg .....	7 50
—, second best .....	Sessions & Co., Los Angeles .....	5 00
Best of 1900 and four pigs, best sow and four pigs .....	S. P. Lindgren & Sons, Kingsburg .....	20 00
Black Maud and four pigs, second best .....	W. R. McCaslin, El Monte .....	10 00
<i>Sweepstakes.</i>		
Chief Perfection IV, best boar any age .....	S. P. Lindgren & Sons, Kingsburg .....	24 00
Midnight, best sow any age .....	W. R. McCaslin, El Monte .....	32 00
Ideal Chief and three sows, best boar and three sows over one year .....	Sessions & Co., Los Angeles .....	26 00
Best four swine .....	S. P. Lindgren & Sons, Kingsburg .....	24 00
Best pen of six pigs .....	S. P. Lindgren & Sons, Kingsburg .....	24 00

## POULTRY.

<i>LIGHT BRAHMAS.</i>		
Best breeding pen .....	F. Forbes, Napa .....	\$5 00
Second best .....	F. Forbes, Napa .....	3 50
Best cock .....	F. Forbes, Napa .....	1 50
Third best .....	Mrs. F. H. Snow, San José .....	50
Best hen .....	F. Forbes, Napa .....	1 50
Best cockerel .....	F. Forbes, Napa .....	1 50
Best pullet .....	F. Forbes, Napa .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
<i>DARK BRAHMAS.</i>		
Second best breeding pen .....	Mrs. F. H. Snow, San José .....	3 50
Second best pullet .....	Mrs. F. H. Snow, San José .....	1 00
Third best .....	Mrs. F. H. Snow, San José .....	50
<i>BLACK COCHINS.</i>		
Best breeding pen .....	T. B. C. Sielcken, Calistoga .....	5 00
Second best cock .....	T. B. C. Sielcken, Calistoga .....	1 00
<i>WHITE COCHINS.</i>		
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best cockerel .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Best pullet .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
<i>BUFF COCHINS.</i>		
Best breeding pen .....	Santa Teresa Farm, Edenvale .....	5 00
Second best .....	T. B. C. Sielcken, Calistoga .....	3 50
Third best .....	Duncan Robertson, Alameda .....	1 50
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	Santa Teresa Farm, Edenvale .....	1 00
Third best .....	Santa Teresa Farm, Edenvale .....	50
Best hen .....	Duncan Robertson, Alameda .....	1 50
Second best .....	Duncan Robertson, Alameda .....	1 00
Third best .....	Duncan Robertson, Alameda .....	50
Best cockerel .....	Santa Teresa Farm, Edenvale .....	1 50
Second best .....	Duncan Robertson, Alameda .....	1 00
Third best .....	Duncan Robertson, Alameda .....	50
Best pullet .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	Duncan Robertson, Alameda .....	1 50
Third best .....	Duncan Robertson, Alameda .....	50

## FIRST DEPARTMENT—POULTRY—Continued.

Exhibit.	Exhibitor.	Award.
<b>PARTRIDGE COCHINS.</b>		
Best cock .....	T. B. Sielcken, Calistoga .....	\$1 50
Second best .....	W. P. Lyon, Edenvale .....	1 00
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	W. P. Lyon, Edenvale .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Third best cockerel .....	T. B. C. Sielcken, Calistoga .....	50
Best pullet .....	W. P. Lyon, Edenvale .....	1 50
Third best .....	T. B. C. Sielcken, Calistoga .....	50
<b>BLACK LANGSHANS.</b>		
Best breeding pen .....	F. P. Lowell, Oakland .....	5 00
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	F. P. Lowell, Oakland .....	1 00
Best hen .....	F. P. Lowell, Oakland .....	1 50
Second best .....	F. P. Lowell, Oakland .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best cockerel .....	F. P. Lowell, Oakland .....	1 50
Second best .....	F. P. Lowell, Oakland .....	1 50
Best pullet .....	F. P. Lowell, Oakland .....	1 50
Second best .....	F. P. Lowell, Oakland .....	1 00
Third best .....	F. P. Lowell, Oakland .....	50
<b>WHITE LANGSHANS.</b>		
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
<b>BARRED PLYMOUTH ROCKS.</b>		
Best breeding pen .....	E. J. Boden, Sacramento .....	5 00
Second best .....	F. Forbes, Napa .....	3 50
Third best .....	H. A. Loud, Vacaville .....	1 50
Best cock .....	F. Forbes, Napa .....	1 50
Best hen .....	E. J. Boden, Sacramento .....	1 50
Second best .....	E. J. Boden, Sacramento .....	1 00
Third best .....	E. J. Boden, Sacramento .....	50
Best cockerel .....	F. Forbes, Napa .....	1 50
Second best .....	Santa Teresa Farm, Edenvale .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
Best pullet .....	E. J. Boden, Sacramento .....	1 50
Second best .....	E. J. Boden, Sacramento .....	1 00
Third best .....	E. J. Boden, Sacramento .....	50
<b>WHITE PLYMOUTH ROCKS.</b>		
Best breeding pen .....	W. A. Gilbert, Sacramento .....	5 00
Second best .....	Coffey Bros., Sacramento .....	3 50
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Best hen .....	Coffey Bros., Sacramento .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Best cockerel .....	W. A. Gilbert, Sacramento .....	1 50
Best pullet .....	W. A. Gilbert, Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
<b>BUFF PLYMOUTH ROCKS.</b>		
Best breeding pen .....	T. B. C. Sielcken, Calistoga .....	5 00
Best cock .....	Mrs. F. H. Snow, San José .....	1 50
Best hen .....	Mrs. F. H. Snow, San José .....	1 50
<b>BROWN LEGHORNS.</b>		
Best breeding pen .....	S. P. Lindgren & Sons, Kingsburg .....	5 00
Second best .....	J. R. Catlett, Pleasant Grove .....	3 50
Third best .....	Coffey Bros., Sacramento .....	1 50
Best cock .....	S. P. Lindgren & Sons, Kingsburg .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
Best hen .....	J. R. Catlett, Pleasant Grove .....	1 50
Second best .....	J. R. Catlett, Pleasant Grove .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50

## FIRST DEPARTMENT—POULTRY—Continued.

Exhibit.	Exhibitor.	Award.
<b>BROWN LEGHORNS—Continued.</b>		
Best cockerel .....	Santa Teresa Farm, Edenvale .....	\$1 50
Second best .....	Santa Teresa Farm, Edenvale .....	1 00
Third best .....	S. P. Lindgren & Sons, Kingsburg .....	50
Best pullet .....	J. R. Catlett, Pleasant Grove .....	1 50
Second best .....	J. R. Catlett, Pleasant Grove .....	1 00
Third best .....	J. R. Catlett, Pleasant Grove .....	50
<b>BROWN LEGHORNS—ROSE COMB.</b>		
Best breeding pen .....	T. B. C. Sielcken, Calistoga .....	5 00
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
<b>WHITE LEGHORNS—ROSE COMB.</b>		
Best breeding pen .....	T. B. C. Sielcken, Calistoga .....	5 00
Second best .....	T. B. C. Sielcken, Calistoga .....	3 50
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Best cockerel .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best pullet .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
<b>WHITE LEGHORNS.</b>		
Best breeding pen .....	Santa Teresa Farm, Edenvale .....	5 00
Second best .....	J. F. Sarmento, San Leandro .....	3 50
Third best .....	J. A. Catlett, Pleasant Grove .....	1 50
Best cock .....	J. F. Sarmento, San Leandro .....	1 50
Second best .....	Santa Teresa Farm, Edenvale .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
Best hen .....	W. P. Lyon, Edenvale .....	1 50
Second best .....	J. F. Sarmento, San Leandro .....	1 00
Third best .....	J. F. Sarmento, San Leandro .....	50
Best cockerel .....	J. F. Sarmento, San Leandro .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Third best .....	Uhl's Poultry Yard, Sacramento .....	50
Best pullet .....	W. P. Lyon, Edenvale .....	1 50
Second best .....	J. F. Sarmento, San Leandro .....	1 00
Third best .....	J. A. Catlett, Pleasant Grove .....	50
<b>BUFF LEGHORNS.</b>		
Best breeding pen .....	S. P. Lindgren & Sons, Kingsburg .....	5 00
Best cock .....	J. F. Sarmento, San Leandro .....	1 50
Second best .....	J. F. Sarmento, San Leandro .....	1 00
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	J. F. Sarmento, San Leandro .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best cockerel .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	J. F. Sarmento, San Leandro .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best pullet .....	S. P. Lindgren & Sons, Kingsburg .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	J. F. Sarmento, San Leandro .....	50
<b>WHITE MINORCAS.</b>		
Best breeding pen .....	T. B. C. Sielcken, Calistoga .....	5 00
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best pullet .....	T. B. C. Sielcken, Calistoga .....	1 50



## FIRST DEPARTMENT—POULTRY—Continued.

Exhibit.	Exhibitor.	Award.
<b>BLACK MINORCAS.</b>		
Best breeding pen .....	Santa Teresa Farm, Edenvale .....	\$5 00
Second best .....	Wm. A. French, Stockton .....	3 50
Third best .....	S. P. Lindgren & Sons, Kingsburg .....	1 50
Best cock .....	Santa Teresa Farm, Edenvale .....	1 50
Second best .....	W. S. Childs, Oakland .....	1 00
Third best .....	Santa Teresa Farm, Edenvale .....	50
Best hen .....	W. S. Childs, Oakland .....	1 50
Second best .....	W. S. Childs, Oakland .....	1 00
Third best .....	S. P. Lindgren & Sons, Kingsburg .....	50
Best cockerel .....	W. S. Childs, Oakland .....	1 50
Second best .....	Wm. A. French, Stockton .....	1 00
Third best .....	S. P. Lindgren & Sons, Kingsburg .....	50
Best pullet .....	W. S. Childs, Oakland .....	1 50
Second best .....	W. S. Childs, Oakland .....	1 00
Third best .....	S. P. Lindgren & Sons, Kingsburg .....	50
<b>ANDALUSIANS.</b>		
Best breeding pen .....	Wm. A. French, Stockton .....	5 00
Best cock .....	Wm. A. French, Stockton .....	1 50
Best hen .....	Wm. A. French, Stockton .....	1 50
Best pullet .....	Wm. A. French, Stockton .....	1 50
<b>SILVER WYANDOTTES.</b>		
Best breeding pen .....	Coffey Bros., Sacramento .....	5 00
Second best .....	Coffey Bros., Sacramento .....	3 50
Best cock .....	Coffey Bros., Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
Best hen .....	Coffey Bros., Sacramento .....	1 50
Best cockerel .....	Coffey Bros., Sacramento .....	1 50
Best pullet .....	Coffey Bros., Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
<b>GOLDEN WYANDOTTES.</b>		
Best cock .....	Coffey Bros., Sacramento .....	1 50
Best hen .....	Coffey Bros., Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
Best cockerel .....	Coffey Bros., Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Third best .....	Coffey Bros., Sacramento .....	50
<b>WHITE WYANDOTTES.</b>		
Best breeding pen .....	F. Forbes, Napa .....	5 00
Second best .....	Santa Teresa Farm, Edenvale .....	3 50
Third best .....	F. Forbes, Napa .....	1 50
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	F. Forbes, Napa .....	1 00
Third best .....	Santa Teresa Farm, Edenvale .....	50
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best cockerel .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	F. Forbes, Napa .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best pullet .....	Santa Teresa Farm, Edenvale .....	1 50
Second best .....	Santa Teresa Farm, Edenvale .....	1 00
Third best .....	Santa Teresa Farm, Edenvale .....	50
<b>POLISH.</b>		
Best breeding pen .....	Mrs. F. H. Snow, San José .....	5 00
Best cock .....	Mrs. F. H. Snow, San José .....	1 50
Best hen .....	Mrs. F. H. Snow, San José .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Third best .....	Mrs. F. H. Snow, San José .....	50
Best cockerel .....	Mrs. F. H. Snow, San José .....	1 50
Second best pullet .....	Mrs. F. H. Snow, San José .....	1 00

## FIRST DEPARTMENT—POULTRY—Continued.

Exhibit.	Exhibitor.	Award.
<b>SILVER-SPANGLED HAMBURGS.</b>		
Best breeding pen .....	Mrs. F. H. Snow, San José .....	\$5 00
Best cock .....	Mrs. F. H. Snow, San José .....	1 50
Best cockerel .....	Mrs. F. H. Snow, San José .....	1 50
Best pullet .....	Mrs. F. H. Snow, San José .....	1 50
<b>BUFF COCHIN BANTAMS.</b>		
Best breeding pen .....	Mrs. F. H. Snow, San José .....	5 00
Second best cock .....	Mrs. F. H. Snow, San José .....	1 00
Second best cockerel .....	Mrs. F. H. Snow, San José .....	1 00
Second best pullet .....	Mrs. F. H. Snow, San José .....	1 00
<b>GOLDEN DUCKWING BANTAMS.</b>		
Best breeding pen .....	Mrs. F. H. Snow, San José .....	5 00
Best cock .....	Mrs. F. H. Snow, San José .....	1 50
Best hen .....	Mrs. F. H. Snow, San José .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Best cockerel .....	Mrs. F. H. Snow, San José .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Best pullet .....	Mrs. F. H. Snow, San José .....	1 50
<b>GOLDEN SEBRIGHT BANTAMS.</b>		
Best breeding pen .....	Santa Teresa Farm, Edenvale .....	5 00
Second best .....	Mrs. F. H. Snow, San José .....	3 50
Best cock .....	Santa Teresa Farm, Edenvale .....	1 50
Second best .....	Santa Teresa Farm, Edenvale .....	1 00
Third best .....	Santa Teresa Farm, Edenvale .....	50
Best hen .....	Santa Teresa Farm, Edenvale .....	1 50
Second best .....	Santa Teresa Farm, Edenvale .....	1 00
Third best .....	Santa Teresa Farm, Edenvale .....	50
Best cockerel .....	George B. Nugent, San José .....	1 50
Second best .....	George B. Nugent, San José .....	1 00
Third best .....	Mrs. F. H. Snow, San José .....	50
Best pullet .....	Mrs. F. H. Snow, San José .....	1 50
<b>SILVER SEBRIGHT BANTAMS.</b>		
Best hen .....	Mrs. F. H. Snow, San José .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Third best .....	Mrs. F. H. Snow, San José .....	50
<b>BLACK-BREASTED RED GAME BANTAMS.</b>		
Best breeding pen .....	Mrs. F. H. Snow, San José .....	5 00
Best cock .....	Coffey Bros., Sacramento .....	1 50
Best hen .....	Coffey Bros., Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Best cockerel .....	Coffey Bros., Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
Best pullet .....	Coffey Bros., Sacramento .....	1 50
Second best .....	Coffey Bros., Sacramento .....	1 00
<b>CORNISH INDIAN GAMES.</b>		
Best breeding pen .....	Percy Ward, Burson .....	5 00
Second best .....	Mrs. F. H. Snow, San José .....	3 50
Best cock .....	Mrs. F. H. Snow, San José .....	1 50
Best hen .....	Percy Ward, Burson .....	2 00
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Third best .....	Mrs. F. H. Snow, San José .....	50
Best cockerel .....	Mrs. F. H. Snow, San José .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
Best pullet .....	Mrs. F. H. Snow, San José .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
<b>HOUDANS.</b>		
Best breeding pen .....	W. P. Lyon, Edenvale .....	5 00
Second best .....	W. P. Lyon, Edenvale .....	3 50
Best cock .....	W. P. Lyon, Edenvale .....	1 50
Second best .....	W. P. Lyon, Edenvale .....	1 00
Third best .....	W. P. Lyon, Edenvale .....	50
Best hen .....	W. P. Lyon, Edenvale .....	1 50
Second best .....	W. P. Lyon, Edenvale .....	1 00

## FIRST DEPARTMENT—POULTRY—Continued.

Exhibit.	Exhibitor.	Award.
<b>HOUDANS—Continued.</b>		
Third best hen .....	W. P. Lyon, Edenvale .....	\$0 50
Best cockerel .....	W. P. Lyon, Edenvale .....	1 50
Second best .....	W. P. Lyon, Edenvale .....	1 00
Third best .....	W. P. Lyon, Edenvale .....	50
Best pullet .....	W. P. Lyon, Edenvale .....	1 50
Second best .....	W. P. Lyon, Edenvale .....	1 00
Third best .....	W. P. Lyon, Edenvale .....	50
<b>MOTTLED LANGSHANS.</b>		
Best breeding pen .....	Mrs. F. H. Snow, San José .....	5 00
Best cockerel .....	Mrs. F. H. Snow, San José .....	1 50
Best pullet .....	Mrs. F. H. Snow, San José .....	1 50
Second best .....	Mrs. F. H. Snow, San José .....	1 00
<b>PEARL GUINEAS.</b>		
Best pair .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
<b>BLACK SPANISH.</b>		
Best hen .....	S. P. Lindgren & Sons, Kingsburg .....	1 50
Second best .....	S. P. Lindgren & Sons, Kingsburg .....	1 00
<b>WHITE GUINEAS.</b>		
Best pair .....	William A. French, Stockton .....	1 50
<b>BLACK BANTAMS—ROSE COMB.</b>		
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Best cockerel .....	T. B. C. Sielcken, Calistoga .....	1 50
Best pullet .....	T. B. C. Sielcken, Calistoga .....	1 50
<b>BUFF COCHIN BANTAMS.</b>		
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Best cockerel .....	George B. Nugent, San José .....	1 50
Best pullet .....	T. B. C. Sielcken, Calistoga .....	1 50
<b>BLACK COCHIN BANTAMS.</b>		
Best breeding pen .....	George B. Nugent, San José .....	5 00
Best cock .....	T. B. C. Sielcken, Calistoga .....	1 50
Best hen .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best cockerel .....	Duncan Robertson, Alameda .....	1 50
Best pullet .....	T. B. C. Sielcken, Calistoga .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
<b>WHITE COCHIN BANTAMS.</b>		
Best breeding pen .....	Duncan Robertson, Alameda .....	5 00
Best cock .....	Santa Teresa Farm, Edenvale .....	1 50
Second best .....	George B. Nugent, San José .....	1 00
Third best .....	T. B. C. Sielcken, Calistoga .....	50
Best hen .....	George B. Nugent, San José .....	1 50
Second best .....	T. B. C. Sielcken, Calistoga .....	1 00
Best cockerel .....	George B. Nugent, San José .....	1 50
Second best .....	George B. Nugent, San José .....	1 00
Third best .....	George B. Nugent, San José .....	50
Best pullet .....	Duncan Robertson, Alameda .....	1 50
Second best .....	George B. Nugent, San José .....	1 00
Third best .....	George B. Nugent, San José .....	50

## FIRST DEPARTMENT—POULTRY—Continued.

Exhibit.	Exhibitor.	Award.
<b>ORPINGTONS.</b>		
Best cock .....	J. R. Riddell, Fresno .....	\$1 50
Second best .....	J. R. Riddell, Fresno .....	1 00
Third best .....	J. R. Riddell, Fresno .....	50
Best hen .....	J. R. Riddell, Fresno .....	1 50
Second best .....	J. R. Riddell, Fresno .....	1 00
Third best .....	J. R. Riddell, Fresno .....	50
Best pullet .....	J. R. Riddell, Fresno .....	1 50
Second best .....	J. R. Riddell, Fresno .....	1 00
Third best .....	J. R. Riddell, Fresno .....	50
Best cockerel .....	J. R. Riddell, Fresno .....	1 50
Second best .....	J. R. Riddell, Fresno .....	1 00
<b>SWEEPSTAKES.</b>		
For the largest and best exhibit of fowl, by one exhibitor, American varieties .....	Coffey Bros., Sacramento .....	10 00
For the largest and best exhibit of fowl, by one exhibitor, Asiatic varieties .....	T. B. C. Sielcken, Calistoga .....	10 00
For the largest and best exhibit of fowl, by one exhibitor, Mediterranean varieties .....	T. B. C. Sielcken, Calistoga .....	10 00
<b>WHITE HOLLAND TURKEYS.</b>		
Best pair .....	T. B. C. Sielcken, Calistoga .....	4 00
<b>BRONZE TURKEYS.</b>		
Best pair .....	J. R. Catlett, Pleasant Grove .....	8 00
Second best .....	Wm. A. French, Stockton .....	5 00
Third best .....	J. R. Catlett, Pleasant Grove .....	2 00
<b>NARRAGANSETT TURKEYS.</b>		
Best pair .....	Wm. A. French, Stockton .....	8 00
Second best .....	J. R. Catlett, Pleasant Grove .....	5 00
<b>GEESE.</b>		
Best pair Toulouse geese .....	T. B. C. Sielcken, Calistoga .....	4 00
Second best .....	T. B. C. Sielcken, Calistoga .....	2 50
Third best .....	J. R. Catlett, Pleasant Grove .....	1 50
Best pair Emden geese .....	T. B. C. Sielcken, Calistoga .....	4 00
Second best .....	T. B. C. Sielcken, Calistoga .....	2 50
Third best .....	T. B. C. Sielcken, Calistoga .....	1 50
<b>DUCKS.</b>		
Best pair Pekin ducks .....	T. B. C. Sielcken, Calistoga .....	4 00
Second best .....	T. B. C. Sielcken, Calistoga .....	2 50
Best pair Pekin ducks under six months .....	J. R. Catlett, Pleasant Grove .....	2 00
Second best .....	Fair Oaks Duck Farm, Oakland .....	1 00
Best pair Rouen ducks .....	W. S. Childs, Oakland .....	4 00
Best pair Black Cayuga ducks .....	Fair Oaks Duck Farm, Oakland .....	4 00
Best pair Grey Call ducks .....	Fair Oaks Duck Farm, Oakland .....	4 00
Best pair Muscovy ducks .....	W. S. Childs, Oakland .....	4 00
Second best .....	W. S. Childs, Oakland .....	2 50
Best pair Indian Runner ducks .....	W. S. Childs, Oakland .....	4 00
Second best .....	Fair Oaks Duck Farm, Oakland .....	2 50
Best pair Indian Runner ducks under six months .....	W. S. Childs, Oakland .....	2 00
Second best .....	W. S. Childs, Oakland .....	1 00

Amount of awards in First Department—Livestock other than poultry .....	\$3,867 00
Amount of awards in poultry section .....	622 00
<b>Total .....</b>	<b>\$4,489 00</b>

## SECOND DEPARTMENT.

## MACHINERY, IMPLEMENTS, ETC.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—MACHINERY, ENGINES, ETC.</b>		
Best spray pump for orchards.....	Bean Spray Pump Co., Los Gatos..	\$20 00
Best display of machinery from one shop or manufactory.....	Baker & Hamilton, Sacramento..	25 00
Best apparatus for raising water for irrigation purposes, not less than 500 gallons per minute.....	Holbrook, Merrill & Stetson, Sac.	10 00
Best well pump.....	Holbrook, Merrill & Stetson, Sac.	10 00
<b>CLASS II—AGRICULTURAL MACHINES—FIRST DIVISION.</b>		
Best cider mill and press.....	Thomson-Diggs Co., Sacramento..	1 00
Best horse hay rake.....	Thomson-Diggs Co., Sacramento..	1 00
Best hay and straw cutter.....	Thomson-Diggs Co., Sacramento..	1 00
Best display of agricultural machinery by any one house, California manufacture.....	Benicia Agricultural Works.....	20 00
Best sweep horse-power, California manufacture.....	Benicia Agricultural Works.....	5 00
Best hay press.....	Baker & Hamilton, Sacramento..	1 00
Best lawn sprinkler.....	Holbrook, Merrill & Stetson, Sac.	1 00
Best gopher trap.....	The A. S. Hopkins Co., Sac'to....	1 00
<b>CLASS III—AGRICULTURAL MACHINES—SECOND DIVISION.</b>		
Best improved beet cultivator.....	S. L. Allen & Co., San Francisco..	5 00
Best one-horse cultivator.....	S. L. Allen & Co., San Francisco..	5 00
Best cultivator.....	S. L. Allen & Co., San Francisco..	5 00
Best potato digger.....	Thomson-Diggs Co., Sacramento..	1 00
Best harrow.....	Thomson-Diggs Co., Sacramento..	Diploma.
Best disk harrow.....	Thomson-Diggs Co., Sacramento..	\$5 00
Best broadcast sowing machine.....	Benicia Agricultural Works.....	5 00
Best self-raking reaping machine.....	Baker & Hamilton, Sacramento..	1 00
Best mowing machine.....	Baker & Hamilton, Sacramento..	5 00
Best wheat drill.....	Baker & Hamilton, Sacramento..	10 00
Best self-binding harvester.....	Baker & Hamilton, Sacramento..	5 00
Best potato planter.....	Ennis-Brown Co., Sacramento....	Diploma.
<b>CLASS IV—AGRICULTURAL MACHINES—THIRD DIVISION.</b>		
Best wire park or paddock fence.....	American Steel and Wire Co., S. F.	Diploma.
Best wire stock fence.....	American Steel and Wire Co., S. F.	Diploma.
Best farm gate.....	American Steel and Wire Co., S. F.	Sil. Med.
Best wire-fence stretcher.....	American Steel and Wire Co., S. F.	Diploma.
Best ornamental fence.....	American Steel and Wire Co., S. F.	Diploma.
Best beehives, without bees.....	The A. S. Hopkins Co., Sac'to....	Diploma.
Best fanning mill.....	Thomson-Diggs Co., Sacramento..	\$1 00
Best windmill.....	Holbrook, Merrill & Stetson, Sac.	10 00
Best agricultural boiler.....	Hendy Machine Works, San Fran.	1 00
Best platform scales.....	G. G. Wickson & Co., San Fran...	2 00
<b>CLASS V—TOOLS AND HOUSEHOLD IMPLEMENTS.</b>		
Best garden seed drill.....	S. L. Allen & Co., San Francisco..	Diploma.
Best clothes horse.....	J. J. Stephenson, Winters.....	Diploma.
Best cabbage cutter.....	The A. S. Hopkins Co., Sac'to....	\$2 00
Best washing machine.....	The A. S. Hopkins Co., Sac'to....	Diploma.
Best egg carrier.....	The A. S. Hopkins Co., Sac'to....	Sil. Med.
Best road scraper.....	Thomson-Diggs Co., Sacramento..	\$5 00
Best excavating scraper.....	Thomson-Diggs Co., Sacramento..	5 00
Best display of haying and harvesting tools.....	Baker & Hamilton, Sacramento..	10 00
Best sausage-meat cutter and stuffer.....	Baker & Hamilton, Sacramento..	2 00
Best clingstone pitter.....	G. G. Wickson & Co., San Fran...	5 00

## SECOND DEPARTMENT—MACHINERY, ETC.—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS VI—FLOWS.</b>		
Best road plow .....	Thomson-Diggs Co., Sacramento	\$5 00
Best two- or three-horse plow .....	Thomson-Diggs Co., Sacramento.	5 00
Best sidehill plow .....	Thomson-Diggs Co., Sacramento.	5 00
Best gang plow .....	Benicia Agricultural Works .....	5 00
Best sulky plow .....	Benicia Agricultural Works .....	5 00
Best subsoil plow .....	Benicia Agricultural Works .....	5 00
Best vineyard plow .....	Benicia Agricultural Works .....	5 00
<b>CLASS VII—VEHICLES.</b>		
Best closed family carriage .....	A. Meister & Sons Co., Sac'to.....	Sil. Med.
Best top buggy .....	A. Meister & Sons Co., Sac'to.....	\$10 00
Best open buggy .....	A. Meister & Sons Co., Sac'to.....	10 00
Best single seat trotting wagon .....	A. Meister & Sons Co., Sac'to.....	10 00
Best trap or ladies' phaeton .....	A. Meister & Sons Co., Sac'to.....	10 00
Best farm wagon for general purposes, wood or iron.....	Baker & Hamilton, Sacramento .....	10 00
Best open family carriage .....	Schaw, Ingram, Batcher & Co., Sac.	Sil. Med.
Best two-seat open wagon .....	Schaw, Ingram, Batcher & Co., Sac.	\$10 00
Best business wagon .....	Schaw, Ingram, Batcher & Co., Sac.	10 00
Farm wagon for general purposes .....	Gene Rey, Maxwell .....	Diploma.
<b>CLASS VIII—MISCELLANEOUS.</b>		
Best farm and orchard truck .....	J. A. Ashley, Winters .....	Diploma.
Best vehicle in white .....	A. Meister & Sons Co., Sac'to.....	Diploma.
Best disk gang plow .....	Thomson-Diggs Co., Sacramento	Diploma.
Best header .....	Baker & Hamilton, Sacramento .....	\$1 00
Best oil-well machinery in operation .....	The R. H. Herron Co., Los Angeles	Sil. Med.
For a complete miniature oil pumping plant	Mount Hamilton Land and Oil Co., Coalinga .....	Diploma.
For "Wise" wood splitter .....	I. A. Coonradt & Son, Oakland.....	Diploma.
For best sprinkling wagon .....	Schaw, Ingram, Batcher & Co., Sac.	Diploma.
Best glass fruit jars .....	Mrs. E. A. Bray, Los Gatos .....	Diploma.
Best automatic side hill fruit ladder .....	J. J. Howard, San Francisco .....	Sil. Med.
Best potato cutter .....	Ennis-Brown Co., Sacramento .....	Diploma.
Best self-feed ensilage cutter .....	Thomson-Diggs Co., Sacramento .....	\$1 00
Best side hill gang plow .....	M. C. Dethlefs, Willows .....	Diploma.
Best Century steam automobile .....	Sunset Automobile Co., San Fran.	Sil. Med.
Best Century electric automobile .....	Sunset Automobile Co., San Fran.	Diploma.
Best Sunset steam automobile .....	Sunset Automobile Co., San Fran.	Diploma.

Total amount of cash awards in Second Department ..... \$298 00

## THIRD DEPARTMENT.

## TEXTILE FABRICS, AND THE MATERIALS FROM WHICH THEY ARE MADE.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—CLOTHING AND KINDRED TEXTURES.</b>		
Best knitted shawl .....	Mrs. S. H. Hastings, Sacramento.	\$3 00
Best collection of furs, not less than six pieces .....	Hale Bros. & Co., Sacramento .....	5 00
Best display of dry goods .....	Hale Bros. & Co., Sacramento .....	20 00
Best display of fancy goods .....	Hale Bros. & Co., Sacramento .....	10 00
Best exhibit of carpets and rugs .....	C. M. Campbell, Sacramento .....	7 50
Best Turkish rug .....	C. M. Campbell, Sacramento .....	5 00

## THIRD DEPARTMENT—TEXTILE FABRICS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS II—NEEDLE AND FANCY WORK AND DECORATIVE PAINTING.</b>		
Best display of knit lace by hand .....	Miss Lucy Barter, Penryn .....	\$5 00
Best embroidered infant's pillow .....	Mrs. A. Adams, Stockton .....	3 00
Best embroidered tea cloth .....	Mrs. A. Adams, Stockton .....	3 00
Largest and finest display of silk embroidery on linen .....	Mrs. A. Adams, Stockton .....	10 00
Best embroidered sideboard cover .....	Mrs. A. Adams, Stockton .....	3 00
Best Renaissance embroidery in rope silk .....	Mrs. A. Adams, Stockton .....	3 00
Best toilet set embroidered in silk .....	Mrs. A. Adams, Stockton .....	5 00
Best embroidered necktie case .....	Mrs. A. Adams, Stockton .....	2 00
Best Queen Anne embroidery .....	Mrs. A. Adams, Stockton .....	3 00
Best combination of tinting and embroidery .....	Mrs. A. Adams, Stockton .....	3 00
Best Empire style of embroidery .....	Mrs. A. Adams, Stockton .....	3 00
Best delft blue centerpiece .....	Mrs. A. Adams, Stockton .....	3 00
Best embroidered round centerpiece .....	Mrs. A. Adams, Stockton .....	3 00
Best crazy patchwork quilt .....	Mrs. Ella Sheldon, Sisson .....	3 00
Best embroidered table cover, all over .....	Mrs. Theodore Deming, Sac'to .....	3 00
Best embroidered piano scarf .....	Mrs. Theodore Deming, Sac'to .....	2 00
Best embroidered ottoman cover .....	Mrs. Theodore Deming, Sac'to .....	2 00
Best embroidered round centerpiece and doilies .....	Mrs. Theodore Deming, Sac'to .....	3 00
Best patchwork quilt .....	Miss A. M. Wilcox, Sacramento .....	3 00
Best hand sewing, not less than three pieces .....	Mrs. S. J. Hastings, Sacramento .....	2 00
Best embroidered tray cloth .....	Mrs. S. J. Hastings, Sacramento .....	3 00
Largest and finest display of outline embroidery .....	Mrs. S. J. Hastings, Sacramento .....	2 00
Best embroidered toilet set on linen .....	Mrs. S. J. Hastings, Sacramento .....	3 00
Best embroidery on silk .....	Mrs. S. J. Hastings, Sacramento .....	2 00
Best set of embroidered napkins or doilies .....	Mrs. S. J. Hastings, Sacramento .....	3 00
Best white cotton embroidery on linen .....	Mrs. S. J. Hastings, Sacramento .....	5 00
Best display of embroidered picture frames .....	Mrs. S. J. Hastings, Sacramento .....	5 00
Best display of pyrography, or burnt wood etching .....	Mrs. T. H. Wood, Suisun .....	5 00
Best single piece, burnt leather work .....	Mrs. B. Muddox, Sacramento .....	3 00
Second best .....	Mrs. B. Muddox, Sacramento .....	2 00
Best panel, burnt wood etching .....	Mrs. B. Muddox, Sacramento .....	2 00
Best display of ladies' underwear .....	Mrs. F. P. Jackson, Sacramento .....	10 00
Best embroidery .....	Mrs. F. P. Jackson, Sacramento .....	3 00
Best course service .....	Mrs. G. B. Carr, Sacramento .....	5 00
Best figure piece .....	Mrs. G. B. Carr, Sacramento .....	3 00
Best flower piece .....	Mrs. G. B. Carr, Sacramento .....	2 00
Best fruit piece .....	Mrs. G. B. Carr, Sacramento .....	2 00
Best jardiniere or bowl .....	Mrs. G. B. Carr, Sacramento .....	2 00
Best vase or piece of bric-a-brac .....	Mrs. G. B. Carr, Sacramento .....	2 00
Best set of plates, not less than six .....	Mrs. G. B. Carr, Sacramento .....	5 00
Best tea, coffee, or chocolate set .....	Mrs. G. B. Carr, Sacramento .....	5 00
Best tray or large plate .....	Mrs. G. B. Carr, Sacramento .....	2 00
Best, largest, and handsomest display of decorative painting .....	Mrs. G. B. Carr, Sacramento .....	20 00
Best velvet bonnet .....	Hale Bros. & Co., Sacramento .....	5 00
Best ladies' hat .....	Hale Bros. & Co., Sacramento .....	5 00
Best display of millinery .....	Hale Bros. & Co., Sacramento .....	2 00
Best display of feathers .....	Hale Bros. & Co., Sacramento .....	1 00
Best single piece .....	Miss E. Kennedy, San Francisco .....	3 00
Best set of cups and saucers, not less than six .....	Miss E. Kennedy, San Francisco .....	5 00
Best cracker or rose bowl .....	Miss E. Kennedy, San Francisco .....	2 00
Best single piece in delft decoration .....	Miss E. Kennedy, San Francisco .....	3 00
Best display of crochet lace .....	Miss V. H. Blacklock, Denverton .....	3 00
Best silk embroidery screens, black wood frame .....	F. Ukiah, Sacramento .....	Sil. Med.
Best silk embroidery bedspread .....	F. Ukiah, Sacramento .....	3 00
Best wood carving .....	H. A. Bristol, Willows .....	3 00

## THIRD DEPARTMENT—TEXTILE FABRICS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS II—PROFESSIONALS.</b>		
Best, largest, and handsomest display of embroidered or hand-painted sofa pillows	Mrs. E. Adams, Los Angeles .....	\$8 00
Best hand-made lace display—Honiton point lace and Battenburg .....	Mrs. T. H. Wood, Suisun City .....	12 00
Best Battenburg bedspread .....	Mrs. T. H. Wood, Suisun City .....	3 75
Best display of hand-made lace handkerchiefs .....	Mrs. T. H. Wood, Suisun City .....	7 50
Best Battenburg curtain .....	Mrs. F. P. Jackson, Sacramento ..	7 50
Best Battenburg centerpiece .....	Mrs. F. P. Jackson, Sacramento ..	4 00
<b>CLASS II—AMATEURS.</b>		
Best display of hand-made lace handkerchiefs .....	Miss Lucy Barter, Penryn .....	5 00
Best Battenburg curtain .....	Mrs. H. M. LaRue, Sacramento ..	5 00
Best, largest, and handsomest display of embroidered or hand-painted sofa cushions .....	Mrs. Theodore Deming, Sac'to ...	7 50
Best display of drawnwork .....	Mrs. Ross Guill, Chico .....	5 00
Best hand-made lace display—Battenburg and Honiton point lace .....	Miss Margaret A. Erhart, Sac'to ..	10 00
<b>MISCELLANEOUS—PROFESSIONAL.</b>		
Best pair of crazy patchwork pillowshams	Mrs. Ella Sheldon, Sisson .....	Diploma.
Best silk clothing for doll .....	F. Ukiah, Sacramento .....	Diploma.
Best display of Battenburg and point lace collars .....	Mrs. T. H. Wood, Suisun City .....	Diploma.
<b>MISCELLANEOUS—AMATEURS.</b>		
Best Battenburg bureau set .....	Mrs. Ross Guill, Chico .....	\$1 00
Best dress and handiwork by child .....	Miss Anita Barrett, Sacramento ..	1 00
Best Battenburg sideboard scarf .....	Mrs. B. Muddox, Sacramento ....	1 00
Best hand-made clock frame of cones, shells, etc. ....	Miss V. H. Blacklock, Denver-ton ..	Sil. Med.
Best Battenburg bolero jacket .....	Miss Margaret A. Erhart, Sac'to ..	\$1 00
<b>CLASS III—PRINTING, LITHOGRAPHY, ETC.</b>		
Best display of stationery .....	The A. S. Hopkins Co., Sac'to .....	2 00

Total amount of cash awards in Third Department ..... \$330 75

## FOURTH DEPARTMENT.

## MECHANICAL PRODUCTS.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—MANUFACTURES OF LEATHER, PAPER, AND RUBBER.</b>		
Best set of double harness .....	A. Meister & Sons Co., Sac'to .....	\$5 00
Best set of single harness .....	A. Meister & Sons Co., Sac'to .....	5 00
Best display of paper manufactured in California .....	The A. S. Hopkins Co., Sac'to .....	2 00
Best display of cordage .....	The A. S. Hopkins Co., Sac'to .....	2 00
Best display of shoe lasts .....	A. Casselli, Sacramento .....	1 00
Best pair dress boots, California manufacture .....	A. Casselli, Sacramento .....	5 00
Best pair heavy boots, California manufacture .....	A. Casselli, Sacramento .....	5 00
Best pair gentleman's shoes, California manufacture .....	A. Casselli, Sacramento .....	5 00



## FOURTH DEPARTMENT—MECHANICAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—MANUFACTURES OF LEATHER, PAPER, AND RUBBER—Continued.</b>		
Best pair ladies' shoes, California manufacture .....	A. Casselli, Sacramento .....	\$5 00
Best display of men's and boys' boots, shoes, gaiters, etc. ....	A. Casselli, Sacramento .....	2 00
Best display of ladies' and girls' boots, and shoes, and gaiters .....	A. Casselli, Sacramento .....	2 00
<b>CLASS II—WORKED METALS.</b>		
Best display of wire rope .....	American Steel and Wire Co., San Francisco .....	Sil. Med.
Best display of wire goods .....	American Steel and Wire Co., San Francisco .....	Sil. Med.
Best display of clocks .....	The A. S. Hopkins Co., Sac'to .....	\$1 00
Best display of ornaments for outside work on buildings .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best display of brass or copper cooking utensils .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best display of brass goods, other than cooking utensils .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best display of plumber's goods and wares .....	Holbrook, Merrill & Stetson, Sac..	2 00
Best display of electric lamps used in decorating .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best display of table cutlery .....	Holbrook, Merrill & Stetson, Sac..	2 00
Best display of kitchen utensils, tin and tinware .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best display of milk cans .....	Holbrook, Merrill & Stetson, Sac..	1 00
Best sample block-tin pipe .....	Holbrook, Merrill & Stetson, Sac..	1 00
Best exhibit of lead pipe .....	Holbrook, Merrill & Stetson, Sac..	1 00
Best display of wire supplies .....	Holbrook, Merrill & Stetson, Sac..	1 00
Best display of general hardware .....	Holbrook, Merrill & Stetson, Sac..	10 00
<b>CLASS III—STOVES, CASTINGS, ETC.</b>		
Best portable range for wood .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best parlor stove for coal .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best wickless oil cook stove .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best laundry stove .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best warming furnace or other apparatus .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best pair ornamental iron vases .....	Holbrook, Merrill & Stetson, Sac..	3 00
Best display of hollowware .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best farmer's caldrons or steamers .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best assortment janned ware .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best display of cast-iron, enameled bath and wash tubs .....	Holbrook, Merrill & Stetson, Sac..	5 00
Best gas and water pipes .....	Holbrook, Merrill & Stetson, Sac..	1 00
Best water and steam gates .....	Holbrook, Merrill & Stetson, Sac..	1 00
Best cooking stove for coal .....	M. Hirsch, Sacramento .....	5 00
Best cooking stove for wood .....	M. Hirsch, Sacramento .....	5 00
Best parlor stove for wood .....	M. Hirsch, Sacramento .....	5 00
<b>CLASS V—FURNITURE.</b>		
Best set library furniture .....	Weinstock, Lubin & Co., Sac'to ..	10 00
Best set bedroom furniture .....	Capital Manufacturing Co., Sac..	10 00
Best set of school furniture .....	Capital Manufacturing Co., Sac..	10 00
Best davenport .....	Capital Manufacturing Co., Sac..	5 00
Best set of parlor chairs .....	Capital Manufacturing Co., Sac..	10 00
Best dressing bureau .....	Capital Manufacturing Co., Sac..	10 00
Best center-table .....	Capital Manufacturing Co., Sac..	5 00
Best display of willow furniture .....	Capital Manufacturing Co., Sac..	10 00
Best display of furniture .....	C. M. Campbell, Sacramento .....	2 00
Best display of drawing-room chairs .....	C. M. Campbell, Sacramento .....	10 00
Best set of dining-room furniture .....	C. M. Campbell, Sacramento .....	10 00
Best set of office furniture .....	C. M. Campbell, Sacramento .....	10 00
Best sofa .....	C. M. Campbell, Sacramento .....	5 00
Best lounge .....	C. M. Campbell, Sacramento .....	5 00
Best extension table .....	C. M. Campbell, Sacramento .....	5 00
Best serving table or buffet .....	C. M. Campbell, Sacramento .....	5 00
Best display of upholstery .....	C. M. Campbell, Sacramento .....	5 00

## FOURTH DEPARTMENT—MECHANICAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS V—FURNITURE—Continued.</b>		
Best spring mattress.....	C. M. Campbell, Sacramento .....	\$5 00
Best hair mattress.....	C. M. Campbell, Sacramento .....	5 00
Best wool mattress.....	C. M. Campbell, Sacramento .....	3 00
Best invalid's chair.....	C. M. Campbell, Sacramento .....	5 00
Best display of California woods.....	Richard Brown, Placerville.....	Sil. Med.
<b>CLASS VI—WOODENWARE.</b>		
Best display of pineware.....	The A. S. Hopkins Co., Sac'to.....	\$5 00
Best display of cedarware.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best display of oakware.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best display of willowware.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best display of splitwood baskets.....	The A. S. Hopkins Co., Sac'to.....	3 00
Best display of turning lathe work.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best display of osier.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best display of woodenware other than willow.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best display of broomcorn, brooms, and brushes.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best assortment of cooper's wares.....	The A. S. Hopkins Co., Sac'to.....	5 00
Best display of matches, in quality and variety.....	The A. S. Hopkins Co., Sac'to.....	1 00
<b>CLASS VII—ELECTRICAL APPLIANCES, ETC.</b>		
Best assortment of spectacles and eye-glasses, showing different styles and shapes of frames and nosepieces.....	F. C. Chinn, Sacramento .....	Sil. Med.
Best assortment of all kinds of unfinished convex, concave, cylindrical, and plano lenses.....	F. C. Chinn, Sacramento .....	Diploma.
Best assortment of all kinds of finished convex, concave, cylindrical, and plano lenses.....	F. C. Chinn, Sacramento .....	Diploma.
Best surveyor's compass.....	F. C. Chinn, Sacramento .....	Diploma.
Best achromatic telescope.....	F. C. Chinn, Sacramento .....	Diploma.
Best optical apparatus.....	F. C. Chinn, Sacramento .....	Diploma.
Best thermometer.....	F. C. Chinn, Sacramento .....	Diploma.
Best barometer.....	The A. S. Hopkins Co., Sac'to.....	\$1 00
Best electric cooking apparatus.....	Holbrook, Merrill & Stetson, Sac..	5 00
<b>CLASS VIII—CHEMICALS.</b>		
Best display of soap.....	James Fox, San Francisco.....	S.M. & \$10
Best castile soap.....	The A. S. Hopkins Co., Sac'to.....	1 00
Best axle grease.....	The A. S. Hopkins Co., Sac'to.....	1 00
Best stove polish, to be tested.....	M. Hirsch, Sacramento.....	Sil. Med.
<b>CLASS IX—STONEWARE, BRICK, TILES, CROCKERY, GLASS, ETC.</b>		
Best sample of drain tile.....	Cowell & Co., Sacramento .....	\$5 00
Best display of terra cotta.....	Cowell & Co., Sacramento .....	10 00
Best display of firebrick.....	Cowell & Co., Sacramento .....	3 00
Best pressed brick.....	Cowell & Co., Sacramento .....	1 00
Best barrel of lime.....	Cowell & Co., Sacramento .....	1 00
Best hydraulic cement.....	Cowell & Co., Sacramento .....	1 00
Best plaster.....	Cowell & Co., Sacramento .....	1 00
Best demijohns.....	The A. S. Hopkins Co., Sac'to.....	1 00
Best exhibit of slate.....	Holbrook, Merrill & Stetson, Sac..	5 00
Best water pipe.....	H. Muddox, Sacramento .....	1 00
Best sewer pipe.....	H. Muddox, Sacramento .....	5 00
<b>CLASS X—MINERALS, FOSSILS, BIRDS, FISHES, ETC.</b>		
Best cabinet of agates, crystallized fossils and crystallized quartz.....	Bath Bros., Sacramento .....	25 00
<b>CLASS XI—MARBLE AND GRANITE WORK.</b>		
Best display of marble lavatories.....	Holbrook, Merrill & Stetson, Sac..	2 00

## FOURTH DEPARTMENT—MECHANICAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS XII—INCUBATORS.</b>		
Best display of incubators in operation.....	Pacific Seed Co., Sacramento.....	\$12 50
For incubator hatching greatest number of chicks.....	Pacific Seed Co., Sacramento.....	5 00
Best display of brooders.....	Pacific Seed Co., Sacramento.....	5 00
Best display of poultry houses.....	Pacific Seed Co., Sacramento.....	5 00
Best display of poultry fixtures.....	Pacific Seed Co., Sacramento.....	5 00
<b>CLASS XIII—MISCELLANEOUS.</b>		
Best display of hydraulic sandstone.....	W. H. Fisher, San Francisco.....	Sil. Med.
Best crude-oil burner for household pur- poses.....	Economy C. Oil B. Co., Oak Park.....	Diploma.
For magical lamp chimney.....	The A. S. Hopkins Co., Sac'to.....	Diploma.
For perfection curtain pole support and shade bracket.....	Ward & Moseley, San Francisco.....	Diploma.
For California oil gas burner.....	E. W. McDonald, Sacramento.....	Diploma.
For display of pine needle products.....	Pacific Pine Needle Co., San Fran.....	Diploma.
Best gasoline launch.....	Baker & Hamilton, Sacramento.....	Sil. Med.
For perfection oil heater.....	M. Hirsch, Sacramento.....	Diploma.
For combination coal and wood range.....	M. Hirsch, Sacramento.....	Diploma.
For instantaneous water heater.....	Tom Scott, Sacramento.....	Diploma.
For oil gas burner.....	Geo. C. Morgan, San Francisco.....	Diploma.
For sunlight water heater in operation.....	M. M. Baker, Oakland.....	Diploma.
Best display of coal, coke, copper, etc.....	Montezuma Mining Co., Sac'to.....	Diploma.

Total amount of cash awards in Fourth Department ..... \$453 50

## FIFTH DEPARTMENT.

## DAIRY PRODUCTS AND DAIRY UTENSILS.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—FRESH BUTTER.</b>		
First premium.....	C. F. Andrews, Port Arena.....	\$50 00
Second premium.....	Peter Phillipsen, Loleta.....	45 00
Third premium.....	Nels Eriksen, Miller.....	40 00
Fourth premium.....	C. A. Starkweather, San Fran.....	35 00
Fifth premium.....	H. F. Lyon, Alameda.....	30 00
Sixth premium.....	George E. Newman, Lompoc.....	25 00
Seventh premium.....	Glanndale Dairy, Franklin.....	20 00
Eighth premium.....	J. H. Severin, Modesto.....	15 00
Ninth premium.....	C. A. Grossman, Greenview.....	10 00
Tenth premium.....	J. E. Thorp, Lockeford.....	5 00
<b>STORAGE BUTTER.</b>		
First premium.....	G. G. Knox, Grafton.....	30 00
Second premium.....	V. S. Howard, Half Moon Bay.....	25 00
Third premium.....	J. N. Kiser, Hollister.....	20 00
Fourth premium.....	Allan Quain, Stockton.....	15 00
Fifth premium.....	W. M. Turner, Sierraville.....	10 00
Sixth premium.....	George E. Newman, Lompoc.....	5 00
<b>EXPORT BUTTER.</b>		
First premium.....	Hills Bros., San Francisco.....	Sil. Med.
Second premium.....	Dairymen's Union of San Fran.....	Bronze M.
Third premium.....	Hilmer & Bredhoff, San Fran.....	Diploma.
<b>CHEESE.</b>		
First premium.....	James A. Howie, Compton.....	\$10 00
Second premium.....	G. Muscio, Los Alamos.....	5 00

## FIFTH DEPARTMENT—DAIRY PRODUCTS AND UTENSILS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS II—DAIRY MACHINERY.</b>		
Best hand cream separator .....	Joshua Hendy Mach. Wks., S. F..	\$5 00
Best pasteurizing apparatus .....	Joshua Hendy Mach. Wks., S. F..	5 00
Best milk tester .....	Joshua Hendy Mach. Wks., S. F..	10 00
Best churn .....	Joshua Hendy Mach. Wks., S. F..	2 00
Best complete creamery outfit ready for operation .....	G. G. Wickson & Co., San Fran...	20 00
Best butter cutter and moulder .....	G. G. Wickson & Co., San Fran...	5 00
Best cream cooler .....	G. G. Wickson & Co., San Fran...	5 00
Best milk aerator and cooler .....	G. G. Wickson & Co., San Fran...	5 00
Best cream ripening vat .....	G. G. Wickson & Co., San Fran...	5 00
Best butter worker .....	G. G. Wickson & Co., San Fran...	2 00
Best power cream separator .....	DeLaval Separator Co., San Fran.	10 00
Best combined churn and worker .....	Baker & Hamilton, Sacramento	10 00
Best milk delivery can .....	Baker & Hamilton, Sacramento	2 00

Total amount of cash awards in Fifth Department ..... \$481 00

## SIXTH DEPARTMENT.

## HORTICULTURAL PRODUCTS.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—DECIDUOUS FRUITS.</b>		
<i>Apples.</i>		
Best display, embracing quality and variety .....	R. A. Day, Placerville .....	\$25 00
Second best .....	R. C. Williamson, Sacramento ...	15 00
Best arranged exhibit .....	R. A. Day, Placerville .....	10 00
Best twelve varieties .....	R. A. Day, Placerville .....	5 00
Best five varieties .....	R. C. Williamson, Sacramento ...	3 00
Best packed box for shipment .....	Mrs. A. Barrett, Sacramento .....	3 00
<i>Pears.</i>		
Best display, embracing quality and variety .....	R. C. Williamson, Sacramento ...	25 00
Second best .....	Mrs. E. Shields, Mills Station ...	15 00
Best arranged exhibit .....	R. A. Day, Placerville .....	10 00
Best twelve varieties .....	Mrs. E. Shields, Mills Station ...	5 00
Best five varieties .....	R. A. Day, Placerville .....	3 00
Best packed box for shipment .....	Mrs. A. Barrett, Sacramento .....	3 00
<i>Peaches.</i>		
Best display, embracing quality and variety .....	R. C. Williamson, Sacramento ...	25 00
Second best .....	R. A. Day, Placerville .....	15 00
Best arranged exhibit .....	R. C. Williamson, Sacramento ...	10 00
Second best .....	R. A. Day, Placerville .....	5 00
Best twelve varieties .....	R. C. Williamson, Sacramento ...	10 00
Second best .....	R. A. Day, Placerville .....	5 00
Best five varieties .....	R. A. Day, Placerville .....	7 50
Best packed box for shipment .....	Mrs. A. Barrett, Sacramento .....	5 00
<i>Nectarines.</i>		
Best display, embracing quality and variety .....	R. C. Williamson, Sacramento ...	25 00
Best arranged exhibit .....	R. C. Williamson, Sacramento ...	10 00
Best five varieties .....	R. C. Williamson, Sacramento ...	3 00

## SIXTH DEPARTMENT—HORTICULTURAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<i>Plums and Prunes.</i>		
Best display, embracing quality and variety	R. C. Williamson, Sacramento	\$25 00
Second best	R. A. Day, Placerville	15 00
Best arranged exhibit	R. C. Williamson, Sacramento	10 00
Second best	R. A. Day, Placerville	5 00
Best twelve varieties	R. C. Williamson, Sacramento	10 00
Second best	R. A. Day, Placerville	5 00
Best five varieties	R. A. Day, Placerville	7 50
Second best	Mrs. E. Shields, Mills Station	5 00
<i>Figs.</i>		
Best display, embracing quality and variety	R. C. Williamson, Sacramento	10 00
Best five varieties of figs	R. C. Williamson, Sacramento	5 00
CLASS II—OLIVES.		
For most meritorious exhibit	J. P. Odbert, Sacramento	25 00
Second best	R. C. Williamson, Sacramento	15 00
Best exhibit of cured or pickled olives (ripe)	J. P. Odbert, Sacramento	10 00
Second best	R. C. Williamson, Sacramento	5 00
Best exhibit of pickled olives (green)	J. P. Odbert, Sacramento	10 00
Best exhibit of dried olives	R. C. Williamson, Sacramento	10 00
Second best	J. P. Odbert, Sacramento	5 00
CLASS IV—CULTIVATED NUTS.		
Best exhibit of walnuts, embracing quality and variety	Mrs. B. Muddox, Sacramento	15 00
Second best	J. P. Odbert, Sacramento	10 00
Best ten varieties of walnuts	Mrs. B. Muddox, Sacramento	15 00
Second best	J. P. Odbert, Sacramento	7 50
Best and largest exhibit of almonds, embracing quality and variety	J. P. Odbert, Sacramento	15 00
Second best	Mrs. E. Shields, Mills Station	10 00
Best ten varieties of almonds	J. P. Odbert, Sacramento	15 00
Second best	Mrs. B. Muddox, Sacramento	7 50
Best exhibit of filberts	Mrs. B. Muddox, Sacramento	5 00
Best exhibit of chestnuts	J. P. Odbert, Sacramento	5 00
Best exhibit of peanuts	Mrs. B. Muddox, Sacramento	5 00
Second best	J. P. Odbert, Sacramento	3 00
CLASS V—TABLE GRAPES.		
Best display, embracing quality and variety	Mrs. E. Shields, Mills Station	25 00
Second best	R. C. Williamson, Sacramento	15 00
Best twelve varieties	Mrs. E. Shields, Mills Station	10 00
Best five varieties	R. C. Williamson, Sacramento	5 00
Second best	Mrs. E. Shields, Mills Station	3 00
Best three varieties	P. Roemer, Sacramento	5 00
Second best	R. C. Williamson, Sacramento	3 00
CLASS VI—DRIED AND PRESERVED FRUITS.		
Largest and best exhibit of dried fruit, embracing quality and variety, by producer	Mrs. E. Shields, Mills Station	50 00
Second largest and best	R. A. Day, Placerville	25 00
Best 25-lb. box dried apples, by producer	R. C. Williamson, Sacramento	5 00
Second best	Mrs. E. Shields, Mills Station	3 00
Best 25-lb. box dried pears, by producer	Mrs. E. Shields, Mills Station	5 00
Second best	R. C. Williamson, Sacramento	3 00
Best 25-lb. box dried peaches, by producer	Mrs. E. Shields, Mills Station	5 00
Second best	R. C. Williamson, Sacramento	3 00
Best 25-lb. box dried plums, by producer	Mrs. E. Shields, Mills Station	5 00
Best 25-lb. box dried prunes, by producer	Mrs. E. Shields, Mills Station	5 00
Second best	R. C. Williamson, Sacramento	3 00
Best 25-lb. box dried apricots, by producer	R. C. Williamson, Sacramento	5 00
Second best	Mrs. E. Shields, Mills Station	3 00
Best 25-lb. box dried nectarines, by producer	R. C. Williamson, Sacramento	5 00
Second best	Mrs. E. Shields, Mills Station	3 00
Best packed commercial box dried apples	Mrs. E. Shields, Mills Station	5 00
Best packed commercial box dried peaches	Mrs. E. Shields, Mills Station	5 00
Best packed commercial box dried pears	Mrs. E. Shields, Mills Station	5 00

## SIXTH DEPARTMENT—HORTICULTURAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS VI—DRIED FRUITS—Continued.</b>		
Best packed commercial box dried prunes	Mrs. E. Shields, Mills Station	\$5 00
Best packed commercial box dried apricots	Mrs. E. Shields, Mills Station	5 00
Best packed commercial box dried plums	R. A. Day, Placerville	5 00
Best packed com're'l box dried nectarines	R. A. Day, Placerville	5 00
Best variety of dried prunes	Mrs. E. Shields, Mills Station	5 00
<b>CLASS VII—DRIED FRUIT COOKING FORMULAS.</b>		
Best exhibit of cooked dried fruits (with formulas), to be cooked daily during the Fair	Mrs. E. Shields, Mills Station	50 00
<b>CLASS IX—HONEY, PRESERVES, PICKLES, ETC.</b>		
Best display of jams and jellies, in glass	Mrs. A. Barrett, Sacramento	25 00
Second best	Mrs. B. Muddox, Sacramento	15 00
Best display of honey	Mrs. B. Muddox, Sacramento	20 00
Second best	A. C. Eastman, Walnut Grove	10 00
Best display of preserved fruits, in glass	Mrs. B. Muddox, Sacramento	10 00
Second best	Mrs. E. Shields, Mills Station	5 00
Best six jars raspberry jelly	Mrs. A. Barrett, Sacramento	3 00
Second best	Mrs. B. Muddox, Sacramento	2 00
Best six jars currant jelly	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best six jars blackberry jelly	Mrs. B. Muddox, Sacramento	3 00
Second best	Mrs. E. Shields, Mills Station	2 00
Best six jars strawberry jelly	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best six jars quince jelly	Mrs. B. Muddox, Sacramento	3 00
Second best	Mrs. E. Shields, Mills Station	2 00
Best six jars guava jelly	Mrs. B. Muddox, Sacramento	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best six jars loquat jelly	Mrs. A. Barrett, Sacramento	3 00
Second best	Mrs. B. Muddox, Sacramento	2 00
Best six jars orange jelly	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best six jars lemon jelly	Mrs. B. Muddox, Sacramento	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best six jars blackberry jam	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best six jars plum jelly	Mrs. A. Barrett, Sacramento	3 00
Second best	Mrs. E. Shields, Mills Station	2 00
Best six jars apple jelly	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best six jars grape jelly	Mrs. A. Barrett, Sacramento	3 00
Second best	Mrs. E. Shields, Mills Station	2 00
Best cucumber pickles	Mrs. B. Muddox, Sacramento	3 00
Second best	R. C. Williamson, Sacramento	2 00
Best pickled onions	Mrs. B. Muddox, Sacramento	3 00
Second best	R. C. Williamson, Sacramento	2 00
Best six jars chowchow	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. B. Muddox, Sacramento	2 00
Best sweet pickled peaches	Mrs. A. Barrett, Sacramento	3 00
Second best	Mrs. E. Shields, Mills Station	2 00
Best sweet pickled grapes	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best sweet pickled plums	Mrs. B. Muddox, Sacramento	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best sweet pickled cucumbers	Mrs. B. Muddox, Sacramento	3 00
Second best	R. C. Williamson, Sacramento	2 00
Best six jars raspberry jam	Mrs. B. Muddox, Sacramento	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best display orange marmalade	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best display of pickles	Mrs. B. Muddox, Sacramento	3 00
Second best	R. C. Williamson, Sacramento	2 00
Best display of brandied peaches	Mrs. E. Shields, Mills Station	3 00
Second best	Mrs. A. Barrett, Sacramento	2 00
Best fig marmalade	Mrs. B. Muddox, Sacramento	3 00

## SIXTH DEPARTMENT—HORTICULTURAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS XI—MISCELLANEOUS.</b>		
Best display of quinces, embracing quality and variety .....	Mrs. A. Barrett, Sacramento .....	\$10 00
Second best .....	R. C. Williamson, Sacramento .....	5 00
Best display of pomegranates of more than three varieties .....	J. P. Odbert, Sacramento .....	10 00
Second best .....	Mrs. E. Shields, Mills Station .....	5 00
<b>SPECIAL PREMIUMS IN THIS DEPARTMENT.</b>		
For the best arranged and most extensive, perfect, and varied exhibit of orchard products .....	Mrs. E. Shields, Mills Station .....	100 00
For second best arranged and most extensive, perfect, and varied exhibit of orchard products .....	R. C. Williamson, Sacramento .....	50 00
For third best arranged and most extensive, perfect, and varied exhibit of orchard products .....	R. A. Day, Placerville .....	25 00

Total amount of cash awards in Sixth Department..... \$1,232 00

## SEVENTH DEPARTMENT.

## VITICULTURAL PRODUCTS, ETC.

Exhibit.	Exhibitor.	Award.
<b>CLASS VI—WINE GRAPES.</b>		
Best display of wine grapes, not less than eight varieties .....	Mrs. E. Shields, Mills Station .....	\$12 50
Best display of wine grapes, not less than three varieties .....	Mrs. E. Shields, Mills Station .....	10 00
Second best .....	P. Roemer, Sacramento .....	5 00
<b>CLASS VII—CIDER.</b>		
Best apple cider, with formula .....	R. C. Williamson, Sacramento .....	5 00
<b>CLASS VIII—VINEGAR.</b>		
Best barrel of pure wine vinegar, exhibited by manufacturer .....	F. C. De Long, San Francisco .....	10 00
Best barrel of pure cider vinegar, exhibited by manufacturer .....	Western Yeast & Vinegar Co., S. F. ....	10 00
<b>CLASS IX—BEER.</b>		
Best display of lager beer .....	Buffalo Brewing Co., Sacramento .....	Dip. & \$10
Best display of export beer .....	Buffalo Brewing Co., Sacramento .....	Dip. & \$10
Best display of keg beer .....	Buffalo Brewing Co., Sacramento .....	Dip. & \$5
<b>CLASS X—MISCELLANEOUS.</b>		
For display of Clo-Tho, made from California fruits and lemon juice .....	F. Henry Hecker, Los Angeles .....	Sil. Med.

Total amount of cash awards in Seventh Department..... \$77 50

## EIGHTH DEPARTMENT.

## AGRICULTURAL PRODUCTS.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—FARM PRODUCTS.</b>		
For the most extensive, perfect, and varied exhibit of farm products grown by one person or farm.....	Mrs. A. Barrett, Sacramento .....	\$100 00
Second premium.....	Mrs. E. Shields, Mills Station .....	50 00
Third premium.....	R. C. Williamson, Sacramento .....	25 00
<b>CLASS II—COTTON AND TOBACCO.</b>		
Best display of California leaf tobacco.....	Seb. Hemberger, Sacramento .....	15 00
Second best.....	Mrs. E. Shields, Mills Station .....	10 00
Best display of California manufactured tobacco.....	Moll Bros., Sacramento .....	S.M. & \$5
<b>CLASS III—FLOUR AND GRAIN.</b>		
Best sample of Australian wheat.....	Mrs. E. Shields, Mills Station .....	\$3 00
Best sample of White Chile wheat.....	Phoenix Milling Co., Sacramento .....	3 00
Best sample of White Club wheat.....	Phoenix Milling Co., Sacramento .....	3 00
Best sample of Proper wheat.....	Phoenix Milling Co., Sacramento .....	3 00
Best sample of Sonora wheat.....	Phoenix Milling Co., Sacramento .....	3 00
Best sample of Odessa wheat.....	Phoenix Milling Co., Sacramento .....	3 00
Best sample of Chevalier barley.....	Mrs. A. Barrett, Sacramento .....	3 00
Best sample of rye.....	Pacific Seed Co., Sacramento .....	3 00
Best sample of barley.....	A. C. Eastman, Walnut Grove .....	3 00
Best sample of oats.....	Mrs. A. Barrett, Sacramento .....	3 00
Best sample of buckwheat.....	Pacific Seed Co., Sacramento .....	3 00
Best sample of baker's flour.....	Phoenix Milling Co., Sacramento .....	Diploma.
Best sample of family flour.....	Brighton Milling Co., Sacramento .....	Diploma.
Best display of hops, quality and variety considered.....	Horst Bros., San Francisco.....	\$5 00
Best sample of timothy seed.....	Pacific Seed Co., Sacramento .....	3 00
Best sample of clover seed.....	Pacific Seed Co., Sacramento .....	3 00
Best sample of mesquit grass seed.....	Pacific Seed Co., Sacramento .....	3 00
Best sample of blue grass seed.....	Pacific Seed Co., Sacramento .....	3 00
Best sample of red-top clover seed.....	Pacific Seed Co., Sacramento .....	3 00
Best sample of orchard grass seed.....	Pacific Seed Co., Sacramento .....	3 00
Best and greatest variety of wheat in ear or head.....	Mrs. A. Barrett, Sacramento .....	5 00
Best exhibit of alfalfa seed.....	Mrs. A. Barrett, Sacramento .....	5 00
Best exhibit of yellow corn.....	Mrs. E. Shields, Mills Station .....	5 00
Best exhibit of white corn.....	Pacific Seed Co., Sacramento .....	5 00
Best exhibit of sweet corn.....	Pacific Seed Co., Sacramento .....	5 00
Best exhibit of garden seeds of California production, not less than twenty-five varieties.....	Pacific Seed Co., Sacramento .....	25 00
Second best.....	Mrs. A. Barrett, Sacramento .....	15 00
Best and largest display of grain in the sheaf.....	Mrs. E. Shields, Mills Station .....	40 00
Second best.....	Mrs. A. Barrett, Sacramento .....	20 00
<b>CLASS IV—VEGETABLES, ROOTS, ETC.</b>		
Best display of canning and shipping tomatoes, embracing quality and variety.....	Mrs. A. Barrett, Sacramento .....	15 00
Second best.....	P. Sani & Co., Sacramento .....	10 00
Best and greatest variety of Irish potatoes.....	Mrs. A. Barrett, Sacramento .....	7 50
Best and greatest variety of sweet potatoes.....	Mrs. A. Barrett, Sacramento .....	5 00
Best sack of sweet potatoes.....	Mrs. A. Barrett, Sacramento .....	3 00
Best display of parsnips.....	Mrs. A. Barrett, Sacramento .....	3 00
Best display of carrots.....	Mrs. A. Barrett, Sacramento .....	3 00
Best display of blood beets.....	Mrs. A. Barrett, Sacramento .....	3 00
Best display of sugar beets.....	Mrs. A. Barrett, Sacramento .....	5 00
Best box of tomatoes.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of drum-head cabbage.....	Mrs. A. Barrett, Sacramento .....	-2 00
Best display of Dutch cabbage.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of any other variety.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of cauliflower.....	Mrs. A. Barrett, Sacramento .....	2 00



## EIGHTH DEPARTMENT—AGRICULTURAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS IV—VEGETABLES, ETC.—Continued.</b>		
Best display of broccoli.....	Mrs. A. Barrett, Sacramento .....	\$2 00
Best display of lettuce.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of red onions.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of squashes.....	Mrs. E. Shields, Mills Station .....	5 00
Best display of yellow onions .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of white onions .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of peppers for pickling.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of salsify.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of celery.....	Mrs. A. Barrett, Sacramento .....	2 00
Best and largest pumpkin.....	Mrs. A. Barrett, Sacramento .....	5 00
Best display of sweet corn, green.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of watermelons .....	Mrs. A. Barrett, Sacramento .....	3 00
Best display of cantaloupes .....	Mrs. A. Barrett, Sacramento .....	3 00
Best display of cucumbers .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of lima beans, in pod .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of white beans, dried.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of kidney bush beans, in pod .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of pole beans, other than lima, in pod .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of field beans, dried.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of gherkin cucumbers .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of purple egg plants.....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of canaigre roots .....	Mrs. A. Barrett, Sacramento .....	5 00
Best display of mangel-wurzels .....	Mrs. A. Barrett, Sacramento .....	5 00
Best display of garden peas, dried.....	Pacific Seed Co., Sacramento .....	2 00
Best and greatest variety of peas, dried .....	Pacific Seed Co., Sacramento .....	2 00
<b>CLASS V—FLOWERS.</b>		
For most attractive general exhibit of ornamental nursery stock .....	H. McWilliams, Sacramento .....	50 00
Second best.....	F. A. Ebel, Sacramento .....	25 00
Best and largest collection of flowering plants in bloom .....	H. McWilliams, Sacramento .....	25 00
Second best.....	F. A. Ebel, Sacramento .....	15 00
Best collection of ornamental foliage plants .....	F. A. Ebel, Sacramento .....	10 00
Best collection of cut flowers .....	F. A. Ebel, Sacramento .....	25 00
Second best.....	H. McWilliams, Sacramento .....	15 00
Best collection of new and rare plants.....	F. A. Ebel, Sacramento .....	15 00
Best display of coleus, distinct varieties.....	H. McWilliams, Sacramento .....	10 00
Best collection of roses in bloom .....	H. McWilliams, Sacramento .....	5 00
Best collection of fuchsias in bloom.....	F. A. Ebel, Sacramento .....	5 00
Best collection of tuberoses in bloom.....	H. McWilliams, Sacramento .....	10 00
Second best.....	F. A. Ebel, Sacramento .....	5 00
Best collection of pinks.....	H. McWilliams, Sacramento .....	10 00
Second best.....	F. A. Ebel, Sacramento .....	5 00
Best collection of ferns .....	H. McWilliams, Sacramento .....	10 00
Second best.....	F. A. Ebel, Sacramento .....	5 00
Best collection of plants suitable for greenhouse, conservatory, and window culture .....	H. McWilliams, Sacramento .....	10 00
Second best.....	F. A. Ebel, Sacramento .....	5 00
Best display of hanging baskets containing plants.....	H. McWilliams, Sacramento .....	10 00
Second best.....	F. A. Ebel, Sacramento .....	5 00
<b>CLASS VI—CURED MEATS, BREAD, ETC.</b>		
Best display of packing-house meats .....	Cudahy Packing Co., San Fran. ....	Spec.G.M.
Best display of home-cured hams, bacon and lard, with formula .....	Mrs. E. Shields, Mills Station .....	\$20 00
Second best.....	Mrs. A. Barrett, Sacramento .....	10 00
Best display and best soda biscuit.....	Mrs. B. Muddox, Sacramento .....	5 00
Best display and best biscuit.....	Mrs. W. F. Smith, Sacramento .....	2 00
Best display and best domestic brown bread .....	Mrs. W. F. Smith, Sacramento .....	2 00
Best display and best domestic rye bread.....	Mrs. W. F. Smith, Sacramento .....	2 00
Best display and best graham bread .....	Mrs. B. Muddox, Sacramento .....	2 00
Best display and best domestic wheat bread .....	Mrs. B. Muddox, Sacramento .....	2 00
Best display and best domestic bread .....	Mrs. W. F. Smith, Sacramento .....	5 00
Second best display and best domestic bread .....	Mrs. W. F. Smith, Sacramento .....	2 00

## EIGHTH DEPARTMENT—AGRICULTURAL PRODUCTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS VII—SUGAR, SYRUP, EXTRACTS, CONFECTIONS, AND CANDY.</b>		
Best display of syrup made from either sugar beets or cane, not less than five gallons .....	H. Fisher, Sacramento .....	\$5 00
Best general display of confectionery .....	H. Fisher, Sacramento .....	5 00
Best general varieties of candies made in the hall during the exhibition .....	H. Fisher, Sacramento .....	5 00
<b>CLASS VIII—MISCELLANEOUS.</b>		
Best display of vegetable plants in bearing .....	Mrs. A. Barrett, Sacramento .....	2 00
Best display of rhubarb roots .....	Mrs. A. Barrett, Sacramento .....	1 00
For Sweetheart chewing gum .....	H. Fisher, Sacramento .....	Sil. Med.
Total amount of cash awards in Eighth Department .....		\$859 50

## NINTH DEPARTMENT.

## FINE ARTS.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—OIL PAINTINGS, WATER COLORS, CRAYONS, CHARCOAL, AND PASTELS.</b>		
Twelve oil paintings .....	H. R. Bloomer, San Francisco .....	\$25 00
Fourteen oil paintings .....	C. Jonnevold, San Francisco .....	25 00
Seventeen oil paintings .....	J. A. Stanton, San Francisco .....	45 00
Six oil paintings .....	C. E. Rixford, San Francisco .....	10 00
Fourteen oil paintings .....	H. S. Fonda, San Francisco .....	20 00
Four oil paintings .....	Mary E. Bruenn, Oakland .....	5 00
Four oil paintings .....	S. M. Farnam, San Francisco .....	10 00
Twelve oil paintings .....	Annie Harmon, San Francisco .....	10 00
Nine oil paintings .....	Jos. M. Cleary, San Francisco .....	15 00
Five oil paintings .....	A. M. Best, San Francisco .....	10 00
Two oil paintings .....	R. D. Yelland, San Francisco .....	15 00
Nine oil paintings .....	Marion Drewe, San Francisco .....	20 00
Ten oil paintings .....	Mary T. Menton, San Francisco .....	20 00
Three oil paintings .....	Nellie E. B. Scott, San Francisco .....	5 00
Four oil paintings .....	H. Gremke, San Francisco .....	10 00
Three oil paintings .....	Alice M. Best, San Francisco .....	10 00
Nine oil paintings .....	C. T. Piazzoni, San Francisco .....	15 00
Nine oil paintings .....	Alice M. Bremer, San Francisco .....	10 00
Four oil paintings .....	Nellie L. Treat, San Francisco .....	10 00
One oil painting .....	Evelyn McCormick, San Fran. .....	15 00
Six oil paintings .....	B. S. Lee, San Francisco .....	20 00
Eight oil paintings .....	Josephine Eckler, San Francisco .....	10 00
Four oil paintings .....	C. A. Rogers, San Francisco .....	10 00
Four oil paintings .....	Kate M. Maher, San Francisco .....	10 00
Five oil paintings .....	H. MacCartney, San Francisco .....	15 00
Six oil paintings .....	L. P. Latimer, San Francisco .....	15 00
Four oil paintings .....	J. N. Jackson, San Francisco .....	15 00
Two oil paintings .....	H. M. Sherwood, Oakland .....	5 00
Two oil paintings .....	Mrs. Rose Campbell, Oakland .....	5 00
Three oil paintings .....	Amanda Austin, Sacramento .....	10 00
Eight oil paintings .....	F. H. Thompson, Oakland .....	5 00
One oil painting .....	N. L. DeNubila, Sacramento .....	5 00
Two oil paintings .....	M. Kleinsorge, Sacramento .....	5 00
One oil painting .....	Alice Chittenden, San Francisco .....	10 00
Two oil paintings .....	Leola Hall, San Francisco .....	5 00
Twelve oil paintings .....	Miss De Neale Morgan, Oakland .....	15 00
Four oil paintings .....	Mazie D. Nichols, Oakland .....	10 00
Three oil paintings .....	Andrew P. Hill, San José .....	15 00
Four oil paintings .....	Mrs. John Dolan, Sacramento .....	5 00
Five oil paintings .....	Martha Patterson, San Francisco .....	10 00
Eight oil paintings .....	Annie F. Briggs, San Francisco .....	15 00

## NINTH DEPARTMENT—FINE ARTS—Continued.

Exhibit.	Exhibitor.	Award.
<b>CLASS I—OIL PAINTINGS—Continued.</b>		
Twelve oil paintings.....	L. Vesario, San Francisco.....	\$10 00
Three oil paintings.....	K. C. Thompson, San Francisco.....	5 00
One oil painting.....	Miss B. Delmus, San Francisco.....	5 00
Two oil paintings.....	Edith Whitfield, San Francisco.....	5 00
Three oil paintings.....	Gertrude Zinders, San Francisco.....	5 00
One oil painting.....	H. Schmidt, San Francisco.....	5 00
Seven oil paintings.....	Mrs. Herrick, Sacramento.....	10 00
Seven oil paintings.....	C. P. Neilson, San Francisco.....	10 00
Two oil paintings.....	W. H. Leffler, San Francisco.....	5 00
Two oil paintings.....	Ruth McCarthy, San Francisco.....	5 00
One oil painting.....	H. Sayle, San Francisco.....	5 00
Two oil paintings.....	Miss E. C. Stone, San Francisco.....	5 00
Six oil paintings.....	W. F. Jackson, Sacramento.....	75 00
Ten oil paintings.....	J. M. Gamble, San Francisco.....	S.M. & \$30
Two charcoal studies.....	A. M. Bremer, San Francisco.....	\$3 00
<b>CLASS II—PHOTOGRAPHS.</b>		
Display of photographs.....	Andrew P. Hill, San José.....	S.M. & \$20
Display of photographs.....	H. L. Allen, Sacramento.....	\$10 00
Display of photographs.....	Laura Adams, San Francisco.....	10 00
Display of photographs.....	N. E. White, Sacramento.....	10 00
<b>CLASS III—ETCHINGS, INDIA INK, PEN AND PENCIL DRAWINGS.</b>		
Pen and ink exhibit.....	Examiner Artists, San Francisco.....	8 00
Twelve pen and ink sketches.....	Amanda P. Austin, Sacramento.....	S.M. & \$20
Seven pen and ink sketches.....	Josephine Eckler, San Francisco.....	\$8 00
Three pen and ink sketches.....	Alice M. Best, San Francisco.....	5 00
Two pen and ink sketches.....	Frank Kleinsorge, Sacramento.....	3 00
Decorative designs.....	P. Lemos, San Francisco.....	3 00
<b>CLASS IV—STATUARY, FRESCO, MOSAIC, AND CARVED WORK.</b>		
Three pieces of sculpture.....	F. Peano, Oakland.....	S.M. & \$25
Two bas-relief pieces.....	Gertrude Boyle, San Francisco.....	\$10 00
<b>CLASS V—PENMANSHIP.</b>		
Best single sample of penmanship, the individual work of exhibitor.....	C. N. Faulk, Sacramento.....	5 00
For the most meritorious display of penmanship, the work of exhibitor, by a resident of California.....	C. N. Faulk, Sacramento.....	Sil. Med.
<b>CLASS VII—CALIFORNIA DRAWINGS AND DESIGNS.</b>		
Best display of mechanical or geometrical free-hand penmanship or drawing, of any kind or character, by any class in the public schools.....	Sacramento City Public Schools.....	\$20 00
Best mechanical free-hand drawing.....	C. Luhrs, Sacramento.....	Sil. Med.
Best original mechanical drawing of any kind.....	R. B. Giffen, Sacramento.....	Sil. Med.
Best plan or design of city residence.....	A. Freedlund, Sacramento.....	Sil. Med.
Best drawing or example of applied ornament in classic architecture.....	G. E. Hook, Sacramento.....	Sil. Med.
Best display of mechanical or geometrical free-hand penmanship or drawing, of any kind or character, by any class in a commercial or business college.....	Howe's Academy, Sacramento.....	Sil. Med.

Total amount of cash awards in Ninth Department..... \$870 00

## GOLD MEDALS AWARDED.

To J. H. Glide, for meritorious exhibit of Ramboulette sheep.

To Cudahy Packing Company, for Rex brand of bacon and lard.

## CREAMERY SCORES.

The fresh and storage butter in the State Fair exhibit ranged as follows in the average of the scores. The names of creamery and buttermaker are given, so far as the latter is known:

### FRESH BUTTER.

Point Arena Creamery, C. F. Andrews.....	97.50
Sunset Creamery, Peter Phillipsen .....	97.16
Bridgeport Creamery, Nels Eriksen.....	97.00
Hygeia Creamery, C. A. Starkweather .....	96.91
Jersey Creamery, H. F. Lyon .....	96.41
Lompoc Creamery, George E. Newman.....	96.25
Glanndale Creamery, Clyde McClaran .....	95.91
Modesto Creamery, J. H. Severin .....	95.83
Siskiyou Creamery, C. A. Grossman, Greenview .....	95.75
Lockeford Creamery, J. E. Thorp .....	95.58
Hygeia Creamery (pasteurized, complimentary).....	95.16
Danish Creamery, Eric Larsen .....	95.00
Diamond Mountain Creamery, Fred Leiser .....	94.91
Hollister Creamery, Joseph N. Kiser.....	94.75
Sheppard Creamery .....	94.66
Castroville Creamery, Charles Fisher .....	94.58
Springbrook Creamery, W. M. Turner .....	93.41
Minnewawa Creamery, S. Koppes.....	92.16
New Era Creamery, D. Brough.....	90.75
Los Baños Creamery .....	79.33

### COLD STORAGE BUTTER.

Knights Landing Creamery, G. G. Knox.....	96.50
Pillarcitos Sunset Creamery, V. S. Howard .....	94.58
Hollister Creamery, Joseph N. Kiser.....	94.50
Stockton Creamery, Allan Quain.....	92.58
Springbrook Creamery, W. M. Turner.....	89.08
Lompoc Creamery, George E. Neuman.....	88.00

### EXPORT BUTTER.

Basis for scoring—Flavor, 30; Grain, 30; Color, 10; Salt, 10; Package, 20.

Hill Bros.....	Flavor, 29; grain, 29; color, 10; salt, 10; package, 18; total, 96
"Eagle" brand, Dairymen's Union .....	
.....	Flavor, 27½; grain, 29½; color, 9½; salt, 10; package, 5; total, 81½
"Golden Poppy," Hilmer & Bredhoff.....	
.....	Flavor, 27; grain, 29; color, 9; salt, 10; package, 5; total, 80

### CHEESE.

Factory No. 338, G. Muscio, Los Alamos.....	96
Factory No. 44, J. A. Howie, Compton.....	94

## SCORES ON BUTTER AT CALIFORNIA STATE FAIR, 1901.

Scored September 10th.

Judges—Leroy Anderson, W. H. Roussel, and W. D. McArthur.

## FRESH BUTTER.

Basis for scoring—Flavor, 50; Grain, 25; Color, 10; Salt, 10; Package, 5.

EXHIBITOR.	ANDERSON.					ROUSSEL.					M'ARTHUR.				
	Fl.	Gr.	C.	S.	P.	Fl.	Gr.	C.	S.	P.	Fl.	Gr.	C.	S.	P.
Point Arena Creamery, Point Arena.	48	24½	10	10	5	48½	24	10	10	5	48½	24	10	10	5
Sunset Creamery, Loleta.	48½	23¾	10	10	5	48	24¾	10	10	4½	48	24	10	10	5
Bridgeport Creamery, Miller.	48¼	24¾	10	10	5	46½	25	10	10	5	48	24	10	10	5
Hygeia Creamery, San Francisco.	48	24¼	10	10	5	46¾	24¾	10	10	5	48	24	10	10	5
Jersey Creamery, Alameda.	47¾	23½	9¾	10	5	48	24¼	9¾	10	5	48	23½	9¾	10	5
Lompoc Creamery, Lompoc.	47½	24	9¾	10	5	48	24½	9½	9¾	5	47½	23½	9¾	10	5
Glanndale Creamery, Franklin.	48½	22½	10	10	4¾	48½	28¼	10	10	4¾	48	22½	10	10	5
Modesto Creamery, Modesto.	46½	24	9¾	10	5	46¾	24½	10	10	5	47	24	10	10	5
Slakiyou Creamery, Greenview.	47	23½	9½	10	4¾	47	24½	10	9¾	4¾	47½	24	10	10	5
Lockeford Creamery, Lockeford.	47	23¾	9¾	10	5	46½	24	10	9¾	5	47½	23¾	9¾	10	5
Hygeia Creamery (Pasteurized, complimentary.)	46¾	23½	9¾	10	5	47	24	9¾	10	5	46½	23¾	10	10	5
Danish Creamery, Fresno.	46	23¾	10	10	4¾	46	24¼	10	10	4¾	46¾	24	10	10	4¾
Diamond Mt. Creamery, Susanville.	46	24	10	10	4¾	46	24½	10	9¾	4¾	46	24¼	10	10	4¾
Hollister Creamery, Hollister.	45½	24	10	10	5	46	24¼	10	10	5	45½	24	10	10	5
Sheppard Creamery, Point Arena.	46	24½	9¾	10	4¾	46	24	10	10	4¾	45½	24½	9½	10	4¾
Castroville Creamery, Castroville.	46¼	23½	9¾	10	5	46	24¼	9½	9½	5	46½	24	9½	10	5
Springbrook Creamery, Sierraville.	44¾	24¼	9¾	9½	4½	45	24¾	10	9¼	4½	45½	24½	10	9	5
Minnewawa Creamery, Fresno.	45	23	9½	10	5	44½	22½	9¼	10	4¾	46	22½	9½	10	5
New Era Creamery, Newman.	45¼	21	9½	10	4¾	45	22	9½	9¾	4¾	45	22	9	10	4¾
Los Baños Creamery, Los Baños.	42	21	8½	10	0	40	21	8	9	0	39	22	8	0	½

## COLD STORAGE BUTTER.

Knights Landing C'ry, Grafton.	47	24	10	10	4¾	47	25	10	10	4¾	48	24	10	10	5
Pillarcitos Sunset C'ry, Half Moon Bay.	46½	23¼	10	10	5	46	23½	10	10	4¾	46¼	23½	10	10	5
Hollister Creamery, Hollister.	45	24¾	9¾	10	5	44½	25	10	10	5	45	24½	10	10	5
Stockton Creamery, Stockton.	44	24	10	10	4	44	24½	10	10	4¼	45	23¾	10	10	4¼
Springbrook Creamery, Sierraville.	41	24¼	9¼	10	5	41	24½	9	10	4¾	41	24¼	8¾	10	5
Lompoc Creamery, Lompoc.	40	24	9½	10	4¾	40	24¾	9¼	10	4¾	40	23	9	10	5

## SPEED PROGRAMME.

MONDAY, SEPTEMBER 2, 1901.

### RACE No. 1—TROTTING.

Occident Stake for 1901; for foals of 1898. Mile heats, three in five. Entries closed January 2, 1899. \$100 entrance, of which \$10 accompanied nomination; \$15 paid January 1, 1900; \$25 paid January 1, 1901; and \$50 thirty days before the race. The Occident Cup, of the value of \$400, added by the Society. First colt to receive cup and six tenths; second colt, three tenths; and third colt, one tenth of the stakes. Value, \$2,595.

1. W. Hogoboom's (Marysville) b. c. Charles H, by Lynmont—Elmorene.
2. Thomas S. Manning's (Avalon) b. c. Commander Muckle, by McKinney—Cheerful.
3. C. A. Owen's (Clovis) ch. c. Lee Roy, by Waldstein—Zadie McGregor.
4. Santa Rosa Stock Farm's (Santa Rosa) ch. f. Lou Dillon, by Sidney Dillon—Lou Milton.
5. D. J. Desmond's (Riverside) b. f. Italia, by Zombro—Concha.
6. J. Doran's (Oakland) b. f. Della McCarty, by McKinney—Lady C.

#### SUMMARY.

Italia (W. Maben) .....	1	1	1
Commander Muckle (F. Ward) .....	3	2	2
Charles H (W. Hogoboom) .....	2	dis.	
Della McCarty (G. Boyd) .....		dis.	

Time—2:25, 2:23½, 2:27¼.

### RACE No. 2—PACING.

2:12 class. Purse, \$500. Mile heats, three in five.

1. S. C. Tryon & Co.'s (Sacramento) blk. m. Margaretta, by Direct—Rosita A.
2. J. H. Thompson's (Riverside) ch. g. El Diablo, by Diablo—Elwood.
3. A. L. Conkling's (Bakersfield) b. m. Edna R, by Sidney—by Director.
4. J. F. Snover's (Newport) b. m. Floracita, by Red Cloak—Maggie H.
5. C. W. Main's (Corona) b. m. Queen R, by Redondo—by Adrian Wilkes.
6. Mrs. Vioget's (Lawrence) b. h. Wildnutling, by Wildnut—Helena.
7. J. D. Heines's (San Francisco) br. h. John A, by Wayland W—Lady Moor.
8. J. B. Iverson's (Salinas) ch. m. Dictatress, by Dictatus—Salinas Belle.

#### SUMMARY.

El Diablo (C. Farrar) .....	4	1	1	1
John A (W. Masten) .....	5	2	2	r. o.
Edna R (I. Mulholland) .....	3	4	3	r. o.
Dictatress (J. H. Vance) .....	6	5	4	r. o.
Margaretta (J. Lafferty) .....	1	7	dis.	
Wildnutling (J. W. Donathan) .....	2	3	dis.	
Floracita (G. H. Judd) .....	7	6	dis.	
Queen R (F. Ward) .....			dis.	

Time—2:13, 2:14, 2:13¼, 2:20¾.

### RACE No. 3—RUNNING.

For three-year-olds and over that have not won three races in 1901. Seven and one half furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Winner to be sold for \$200. Beaten non-winners and beaten maidens in 1901 allowed 5 lbs. additional

1. R. J. Gardner's ch. g. Mefford (4), by Shannon—Miss Mitford; 107 lbs.
2. J. Coffey's ch. g. Galanthus (3), by July—Snowdrop; 106 lbs.
3. Owen Bros.' ch. f. Conejo (4), by Royal Flush—Lady Emma; 109 lbs

4. Wm. Cahill's b. g. Rinaldo (6), by Leonatus—Dahlia; 112 lbs.
5. Thomas Latta's b. g. Pongo (6), by El Rio Rey—Ogalena; 107 lbs.
6. George Miller's b. g. Decoy (4), by Imp. Deceiver—Nantucket; 112 lbs.
7. O. Appleby's ch. g. Ringmaster (a), by Buckmaster—Grisette; 112 lbs.
8. D. Morgan's b. g. McFarlane (6), by Imp. Mariner—Moonlight; 107 lbs.

## SUMMARY.

Decoy (Foucon) .....	1
Rinaldo (Hoar) .....	2
Conejo (Russell) .....	3

Time—1:35¼.

## RACE No. 4—RUNNING.

For all ages. Five and one half furlongs. Selling. Purse, \$250; of which \$40 to second and \$20 to third. Winner to be sold for \$600. 5 lbs. below scale. Non-winners of five races of any value in 1901 allowed 5 lbs.; of three races in 1901, 7 lbs.; beaten non-winners of a race in 1901, 12 lbs.

1. Lone Stable's b. g. Cavanaugh (3), by Imp. Idaliun—Lady Cleveland; 99 lbs.
2. Martin Duffy's b. m. Phlegon (4), by Imp. Piccolo—Little Rose; 105 lbs.
3. W. L. Stanfield's br. m. Kitty Kelly, (4), by Apache—Playtoy; 114 lbs.
4. C. Young's ch. m. Good Hope (4), by Col. Clark—Gratitude; 114 lbs.
5. E. Kaufman's ch. m. Katie Walcott (4), by Prince Royal—Penelope; 102 lbs.
6. J. S. Gibson's b. f. Narra G (3), by Bloomsbury—Czarina; 101 lbs.
7. J. P. Atkins's br. c. Achilles (2), by St. Carlo—Moonlight; 86 lbs.
8. G. W. Snider & Co.'s ch. m. Vantine (4), by Imp. Anchorite—Vestina; 109 lbs.
9. J. Coffey's ch. f. Eeva G (2), by Imp. Juvenal—Sister Geneva; 81 lbs.

## SUMMARY.

Narra G (Howson) .....	1
Good Hope (J. McCarty) .....	2
Kitty Kelly (Foucon) .....	3

Time—1:07.

## RACE No. 5—RUNNING.

For two-year olds that have not won two races in 1901. Five furlongs. Purse, \$225; of which \$40 to second and \$15 to third. 5 lbs. below scale. Non-winners of a race allowed 5 lbs.

1. Stanfield & Ellis's br. f. Flo Culver (2), by Lew Weir—Juanita; 110 lbs.
2. L. A. Blasingame's b. c. Porous (2), by Wernberg—Chevy Chase; 113 lbs.
3. G. W. Snider & Co. ch. f. Quadra (2), by Imp. Prestonpans—Miss Belinda; 106 lbs.
4. S. F. Capps's b. c. Gypsy Boy (2), by Imp. True Briton—Gypsy Girl; 113 lbs.
5. Lone Stable's ch. g. Col. Smith (2), by Thornhill—Tillie S; 108 lbs.
6. F. D. Weir's br. f. Flattered (2), by Emperor—Flattery; 105 lbs.
7. P. Donalache's b. g. Sol (2), by Imp. Trentolo—Ursula; 113 lbs.
8. E. Lanigan's br. g. Hainault (2), by St. Carlo—Libbertiffibbet; 113 lbs.
9. P. Guilfoyle's b. g. Redan (2), by Imp. Artillery—Princess Noretta; 108 lbs.
10. A. J. Stemler's ch. c. Quiet (2), by Imp. Gold Finch—Silence; 113 lbs.
11. Gil Summers & Co.'s ch. g. Rubina (2), by Imp. Star Ruby—Torsina; 113 lbs.

## SUMMARY.

Hainault (J. McCarty) .....	1
Rubina (Foucon) .....	2
Quadra (Russell) .....	3

Time—1:01.

## RACE No. 6—RUNNING.

For three-year-olds and upward, non-winners of more than one race this year. Six furlongs. Selling. 10 lbs. below scale. Non-winners allowed 5 lbs. All to be sold for \$200.

1. Wm. Cahill's b. c. Lief Prince (3), by Prince Lief or Bermuda—Natalie; 106 lbs.
2. H. Whitman's br. g. Whaleback (5), by Imp. Duncombe—Orange Leaf; 112 lbs.
3. G. Burger's b. f. Mamie Hildreth (3), by Thornhill—Mamie H; 98 lbs.
4. C. W. Carroll's b. f. Artilla (4), by Artillery—Duchess of Towers; 109 lbs.

5. P. Holly's br. g. Bob Palmer (3), by King Regent—Crescendo; 101 lbs.
6. M. Kane's br. g. Herald (4), by Herald—Acquito; 112 lbs.
7. C. T. Rector's ch. m. Mountain Dew (5), by Blazes—Alice B; 109 lbs.
8. E. G. McConnell's ch. m. Lost Girl (5), by Sobrante—Nellie K; 109 lbs.
9. G. Secrest & Co.'s b. f. Roundhead (3), by Puryear D—Miss Cromwell; 98 lbs.

## SUMMARY.

Whaleback (Burlingame).....	1
Lost Girl (J. McCarty).....	2
Mamie Hildreth (J. Tullett).....	3

Time—1:16.

TUESDAY, SEPTEMBER 3, 1901.

## RACE NO. 7—PACING.

2:20 class. Purse, \$500. Mile heats, three in five.

1. Santa Rosa Stock Farm's (Santa Rosa) ch. g. B. S. Dillon, by Sidney Dillon.
2. W. M. Bartee's (Riverside) blk. g. Midnight, by Nutford—by Grandee.
3. J. A. Lafferty's (Oakland) br. h. Advertiser, by Advertiser—by Steinway.
4. Ed Graser's (Riverside) ch. m. Nellie I, by Gossiper.
5. Vendome Stock Farm's (San José) ch. m. Our Boy's Sister, by Baywood—Wapsie.
6. W. Vanderhurst's (Salinas) b. m. Diablita, by Diablo—by Carr's Mambrino.
7. R. R. Brown's (Oakland) b. m. Miramonte, by Diablo—Cresco.
8. R. Freeman's (Red Bluff) b. m. Banker's Daughter, by Arthur Wilkes—Sunflower.

## SUMMARY.

Midnight (D. Donahue).....	1	1	2	1
Banker's Daughter (Wm. Brown).....	5	3	1	2
Our Boy's Sister (C. F. Bunch).....	3	2	3	r. o.
Advertiser (J. A. Lafferty).....	4	4	4	r. o.
B. S. Dillon (Geo. Ramage).....	2	5	dis.	
Miramonte (H. D. Brown).....	dis.			
Diablita (J. Dwain).....	dis.			

Time—2:14½, 2:14½, 2:14½, 2:17.

## RACE NO. 8—TROTTING.

2:40 class. Purse, \$800. Mile heats, three in five.

1. Vendome Stock Farm's (San José) b. m. Nora McKinney, by McKinney—by Dexter Prince.
2. A. Joseph's (San Francisco) ch. m. Floradora, by Sable Steinway—Pearl.
3. W. S. Maben's (Los Angeles) b. g. Cornelius D, by McKinney—by Bob Mason.
4. P. Foley's (Oakland) br. m. Lady Granard, by McKinney—Igo Antevolo.
5. Thomas Morton's (Sacramento) b. g. Albert X, by Albert W—by Echo.
6. D. F. Oglesby's (Carpenteria) b. h. Almonada, by Eros—Maggie E.
7. Grace Bros.' (Santa Rosa) br. h. Ole, by Silas Skinner—Eleaven.
8. John Quinn's (Santa Rosa) blk. h. Black Bart, by Robin—by Williamson's Belmont.
9. A. G. Gurnett's (San Francisco) gr. g. What Is It, by Direct—Lassie Jean.
10. I. Mulholland's (Independence) br. g. Peter Jackson, by Designer—by Abbotsford.
11. R. Freeman's (Red Bluff) b. g. Prince L, by Escort—Queen L.
12. T. C. Cabney's (Eureka) br. m. Pearl K, by Wayland W—by The Grand Moor.
13. S. J. Dunlop's (Los Angeles) b. m. Lucy G, by Junio—Lofty.
14. George F. Jacobs's (Nevada City) br. g. Walling, by Waldstein—by Pasha.
15. C. Dennison's (Los Angeles) b. h. McKenna, by McKinney—Etta Wilkes.
16. Tuttle Bros.' (Rocklin) b. m. Rosalind, by Stam B—Klickit Maid.

## SUMMARY.

Black Bart (J. Quinn).....	7	2	1	1	1
Nora McKinney (C. F. Bunch).....	1	1	3	2	2
Cornelius D (W. S. Maben).....	3	4	2	r. o.	
Almonada (H. Delaney).....	2	5	6	r. o.	
Lucy G (J. R. Albertson).....	4	6	4	r. o.	
McKenna (F. E. Ward).....	5	3	5	r. o.	
Peter Jackson (J. Depoister).....	6	7	7	r. o.	
Walling (J. Dwain).....	dis.				
Albert X (Thomas Norton).....	dis.				

Time—2:19¼, 2:16¼, 2:17¼, 2:21, 2:25.



## RACE No. 9—RUNNING.

For two-year-olds. Five and one half furlongs. Purse, \$225; of which \$40 to second and \$15 to third. 5 lbs. below the scale. A non-winner of a stake race, if a non-winner of three races, allowed 5 lbs.; of two races and maidens, 7 lbs; beaten maidens, 12 lbs.

1. E. B. Smith's ch. g. Resin (2), by Ransom—Atlantus; 101 lbs.
2. J. S. Campbell's ch. f. Innocencia (2), by Emp. Norfolk—Espiritu Santa; 110 lbs.
3. Neil & Mackey's ch. c. Charette (2), by Imp. Crighton or Eolo—Fatina; 101 lbs.
4. C. W. Carroll's br. f. Roselaw (2), by Bassetlaw—Rosalind; 105 lbs.
5. Stanfield & Ellis's br. f. Flo Culver (2), by Lew Weir—Juanita; 103 lbs.
6. P. E. Smith's ch. g. Fred Atterbury (2), by Bowling Green—Kitty Waddle; 101 lbs.
7. J. P. Atkins's ch. g. Glendenning (2), by St. Carlo—Glenlevit; 113 lbs.

## SUMMARY.

Glendenning (Logue) .....	1
Innocencia (J. McCarty).....	2
Flo Culver (J. Dugan).....	3

Time—1:07.

## RACE No. 10—RUNNING.

Flash Stake; for all ages. Six furlongs. Entrance \$10, to accompany nomination; \$20 additional for horses not declared by 4 p. m. the day preceding the race; \$400 added by the Society, of which \$70 to second and \$30 to third. Non-winners of three races this year, if three years old and over, allowed 5 lbs.; non-winners of two races, 7 lbs.; and non-winners of one race, 10 lbs. Maidens, three years old, allowed 5 lbs.; four years old and over, 7 lbs. additional. Closed with 17 entries. Total value, \$670.

1. Owen Bros.' b. f. Flush of Gold (3), by Royal Flush—Gold Cup; 112 lbs.
2. J. S. Gibson's b. f. Narra G (3), by Bloomsbury—Czarina; 106 lbs.
3. C. Young's ch. g. Meehanus (5), by Imp. Golden Garter—Fidalmu; 122 lbs.
4. R. Wilson's ch. g. Byron Rose (3), by Ducat—Rose Magenta; 106 lbs.
5. Gil Summers & Co.'s ch. g. True Blue (a), by Duke of Norfolk—Carmen; 115 lbs.

## SUMMARY.

Flush of Gold (Hoar) .....	1
Meehanus (J. McCarty).....	2
Byron Rose (J. McDermit)....	3

Time—1:13.

## RACE No. 11—RUNNING.

For three-year-olds. Six furlongs. Selling. Purse, \$250; of which \$40 to second and \$20 to third. Winner to be sold for \$800; if for less, 2 lbs. allowed for each \$100 down to \$200. Non-winners of three races in 1901 allowed 5 lbs.

1. F. D. Weir's br. c. Flatterer (3), by Emperor—Flattery; 110 lbs.
2. J. D. Dunn's br. g. Pegalong (3), by Imp. Crighton—Sweet Peggy; 105 lbs.
3. L. A. Blasingame's b. g. Graftor (3), by Cicero—Leapyear; 114 lbs.
4. C. Young's ch. f. Eonic (3), by Eon—Mermaid; 109 lbs.
5. E. Carey's b. g. David S (3), by Midlothian—Taluda; 110 lbs.

## SUMMARY.

David S (Logue) .....	1
Eonic (J. McCarty).....	2
Flatterer (Hoar) .....	3

Time—1:13¾.

## RACE No. 12—RUNNING.

For four-year-olds and over. One mile. Selling. Purse, \$225; of which \$40 to second and \$15 to third. 7 lbs. below scale. Non-winners of three races in 1901 allowed 5 lbs.; of two races, 8 lbs.; of a race, 12 lbs. Winner to be sold for \$250.

1. George Miller's br. h. Sir Hampton (4), by Water Cress—Imp. Lizzie Hampton; 115 lbs.
2. E. B. Smith's b. g. Sea Spray (a), by Imp. Mariner—Marinet; 103 lbs.
3. J. McGovern's ch. m. Torsida (6), by Torso—Judith; 104 lbs.
4. D. F. Cox's ch. m. Castaine (5), by Eotheon—Pearlfinder; 100 lbs.
5. C. Earl's b. m. Coming Event (4), by Imp. Calvados—Katrinka; 104 lbs.
6. Lone Stable's br. g. Casdale (5), by Favordale—Castalia; 103 lbs.

- 7 F. D. Weir's ch. g. Merops (5), by Brutus—Merope; 115 lbs.
- 8 J. S. Campbell's b. g. Burdock (4), by Imp. Matt Byrnes—Alva Daly; 115 lbs.
- 9 T. E. McLaughlin's b. g. Mike Rice (a), by J. H. Fenton—Mrs. McAllister—115 lbs.

## SUMMARY.

Sir Hampton (Foucon).....	1
Coming Event (Ross).....	2
Merops (Hoar).....	3

Time—1:41½.

## WEDNESDAY, SEPTEMBER 4, 1901.

## RACE No. 13—PACING.

Stake for three-year-old pacers. Mile heats, three in five. \$10 entrance; \$20 additional from starters; \$250 added. All moneys to be divided 60, 30, and 10 per cent.

1. James A. Daly's (Napa) b. c. Osmont, by Altamont—Saturn.
2. T. W. Barstow's (San José) b. f. Alone, by Wilkes Direct—Grenelt.
3. J. Eviston's (San Francisco) b. g. Joe Eviston, by Seymour Wilkes—by Nephew.
4. R. H. Nason's (Dixon) b. f. Fidelity, by Falrose—Mischief.
5. F. E. Wright's (Sacramento) b. m. Pearl Sinclair, by Hanford Medium—Algaveta.

## SUMMARY.

Osmont (Ward).....	2	3	1	1	1
Pearl Sinclair (W. Tryon).....	3	2	2	r.	o.
Joe Eviston (J. Cincello).....	1	1	dis.		

Time—2:22, 2:25, 2:29½, 2:30, 4:20.

## RACE No. 14—PACING.

For all horses eligible to the 2:18 class. Purse, \$400. Mile heats, three in five.

1. Wm. Vanderhurst's (Salinas) b. m. Diablita, by Diablo—Salinas Maid.
2. R. R. Brown's (Oakland) b. m. Miramonte, by Diablo—Cresco.
3. A. M. Leeper's (Reno) br. g. Wilfred L, by Bozer—Lady H.
4. Ed. Kavanaugh's (Vallejo) ch. s. Gaff Topsail, by Diablo—Belle.
5. John Donohue's (San Bernardino) b. c. Richard B, by Woolsey—by Ten Broeck.
6. W. Maston's (San Francisco) b. g. Penrose, by Falrose—by Brigadier.

## SUMMARY.

Gaff Topsail (J. Smith).....	1	1	1
Richard B (D. Donahue).....	2	3	2
Diablita (J. Dwain).....	3	2	5
Wilfred L (R. C. Leeper).....	5	4	3
Penrose (W. Maston).....	4	5	4
Miramonte (H. D. Brown).....	dis.		

Time—2:19½, 2:16, 2:18½.

## RACE No. 15—RUNNING.

For three-year-olds and over, maidens and non-winners of a race of 1901. Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Three-year-olds to carry 107 lbs.; four and over, 110 lbs.; those beaten three or more times in 1901, allowed 5 lbs. Winner to be sold for \$200.

1. C. W. Carroll's b. f. Chaste (3), by Jim Gore—Imp. British Blue Blood; 99 lbs.
2. D. Morgan's b. g. McFarlane (6), by Imp. Mariner—Moonlight; 105 lbs.
3. P. Holly's br. g. Bob Palmer (3), by King Regent—Crescendo; 102 lbs.
4. Secrest & Co.'s b. f. Roundhead (3), by Fureyear D—Miss Cromwell; 99 lbs.
5. J. Webb's br. g. San Augustine (5), by Emperor of Norfolk—The Hook Blind; 105 lbs.
6. Owen Bros.' b. h. Grady (a), by Three Cheers—Gold Cup; 110 lbs.
7. Thomas Latta's b. g. Pongo (6), by El Rio Rey—Ogalena; 105 lbs.
8. P. L. Rector's b. g. Pent Etre (3), by General Miles—Vellicht; 102 lbs.
9. John Lodge's br. f. Little Gun (3), by Imp. Artillery—Queen Kapiolana; 107 lbs.

## SUMMARY.

McFarlane (Burlingame).....	1
San Augustine (Ashley).....	2
Grady (Russell).....	3

Time—1:15½.

## RACE No. 16—RUNNING.

The Shafter Stake; for two-year-olds. Six furlongs. Entrance \$10, to accompany nomination; \$15 additional for colts not declared by 4 p. m. the day preceding the race; with \$300 added by the Society, of which \$50 to second and \$25 to third. Horses may be entered not to be sold, and carry rule weight. If entered to be sold for \$1,000, allowed 3 lbs.; \$700, 6 lbs.; \$400, 10 lbs. Winners of one race after closing of stake to carry 3 lbs. extra; of two or more, 7 lbs. extra. Maidens beaten three times allowed 5 lbs.; four or more times, 7 lbs. Closed with 20 entries. Total value, \$590.

1. J. Coffey's ch. f. Evea G (2), by Imp. Juvenal—Sister Geneva; 105 lbs.
2. A. J. Stemler's br. f. Divina (2), by Bassetlaw—Angelete; 105 lbs.
3. J. P. Atkins's br. c. Achilles (2), by St. Carlo—Moonlight; 108 lbs.
4. W. B. Sink, Jr.'s b. g. Royalty (2), by Imp. Cavalier—Empress of Norfolk; 105 lbs.
5. G. Summers & Co.'s br. g. Water Scratch (2), by Imp. Water Cress—Helen Scratch; 108 lbs.
6. G. Summers & Co.'s ch. g. Rubina (2), by Imp. Star Ruby—Torsina; 105 lbs.

## SUMMARY.

Achilles (Hoar) .....	1
Divina (Russell) .....	2
Royalty (J. McCarty) .....	3

Time—1:14½.

## RACE No. 17—RUNNING.

For three-year-olds and over. Six furlongs. Selling. Purse, \$250; of which \$40 to second and \$20 to third. Winner to be sold for \$700; 2 lbs. allowed on each \$100 down to \$200. Non-winners of two races in 1901 allowed 5 lbs.

1. E. Carey's b. f. Catherine Bravo (3), by Rio Bravo—Catherine B; 103 lbs.
2. E. Kaufman's b. m. Katie Walcott (4), by Prince Royal—Penelope; 104 lbs.
3. Wm. Cahill's b. g. Prestidigitator (4), by Russell—Active; 114 lbs.
4. L. Tryon's b. m. Galene (4), by Imp. Brutus—Picnic; 104 lbs.
5. J. Coffey's ch. g. Galanthus (3), by July—Snowdrop; 101 lbs.
6. G. Burger's b. f. Mamie Hildreth (3), by Thornhill—Mamie H; 104 lbs.
7. P. Crowley's br. h. Gusto (4), by Brutus—Irish Lass; 116 lbs.
8. H. Whitman's ch. g. Fine Shot (4), by Balgowan—Dignity; 107 lbs.
9. C. Young's ch. m. Good Hope (4), by Col. Clark—Gratitude; 111 lbs.
10. G. L. Richardson's blk. Pidalia (4), by Idalium—Piquante; 104 lbs.
11. J. L. Rector's ch. m. Lou Clievden (4), by Imp. Clievden—Miss Lou; 109 lbs.

## SUMMARY.

Good Hope (J. McCarty) .....	1
Mamie Hildreth (Howson) .....	2
Catherine Bravo (Logue) .....	3

Time—1:14½.

## RACE No. 18—RUNNING.

For three-year-olds and over, maidens and non-winners of a race in 1901. Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Three-year-olds to carry 107 lbs.; four and over, 110 lbs.; those beaten three or more times in 1901 allowed 5 lbs. Winner to be sold for \$200.

1. W. D. Hayes's b. g. Ravino (3), by Racine—Precious; 102 lbs.
2. P. E. Smith's b. m. Little Sister (a), by Imp. Friar Tuck—Lowland Lass; 107 lbs.
3. Walter Maben's b. m. Miss Vera (4), by Amigo S—Fame; 107 lbs.
4. W. B. Jennings's ch. g. Canderos (4), by Candlemas—Hinda Dwyer; 107 lbs.
5. Lone Stable's b. g. Cavanaugh (3), by Imp. Idalium—Lady Cleveland; 102 lbs.
6. M. Kane's b. g. Heraldo (4), by Herald—Acquito; 110 lbs.
7. Murray & Collins's ch. g. Toribio (a), by Apache—Marin; 105 lbs.
8. R. J. Gardner's ch. g. Mefford (4), by Shannon—Miss Mitford; 105 lbs.
9. James Martin, Jr.'s b.m. Phlegon (4), by Imp. Piccolo—Little Rose; 110 lbs.

## SUMMARY.

Miss Vera (Howson) .....	1
Phlegon (Russell) .....	2
Ravino (Bozeman) .....	3

Time—1:14.

THURSDAY, SEPTEMBER 5, 1901.

## RACE No. 19—PACING AND TROTTING.

For members of Sacramento Driving Club.

1. F. E. Wright's (Sacramento) br. h. Baby Button, by Alexander Button—Algerine.
2. H. A. Bell's (Sacramento) ch. m. Pansy, by Prompter—by Black Hawk.
3. L. S. Upson's (Sacramento) b. m. Regina F, by Alto Rex—by Nephew.
4. F. J. Ruhstaller, Jr.'s (Sacramento) b. g. Monroe B, by Monroe.
5. Charles Paine's (Sacramento) br. g. Pio, by Fern—Sunflower.
6. William Trust's (Sacramento) br. g. Candy Joe, by Berlin.
7. F. M. Enos's (Sacramento) b. h. John the First, by Stanton Wilkes.

## SUMMARY.

Monroe B (F. J. Ruhstaller, Jr.) .....	4	3	1	1	1
Baby Button (F. E. Wright) .....	1	2	2	2	2
Pio (C. W. Paine) .....	3	4	3	r.	o.
Regina F (L. S. Upson) .....	2	1	dis.		
Candy Joe (Wm. Trust) .....	5	dis.			
Pansy (H. A. Bell) .....	dis.				

Time—2:20, 2:22, 2:22, 2:28, 2:30.

## RACE No. 20—TROTTING.

2:14 class. Purse, \$1,000. Mile heats, three in five.

1. Valencia Stock Farm's (Los Angeles) br. m. Bet Madison, by James Madison—Betsy Trotwood.
2. W. S. Maben's (Los Angeles) gr. h. Richmond Chief, by Monroe Chief—by A. W. Richmond.
3. T. J. Crowley's (San Francisco) br. h. Boydello, by Boydell—by Durango Chief.
4. George F. Anderson's (San José) b. g. Claudius, by Nutwood Wilkes—Fannie Menlo.
5. George A. Kelly's (Pleasanton) b. m. Anzella, by Antrim—Hazel Kirke.
6. M. M. Hackett's (Alhambra) b. h. Geo. W. McKinney, by McKinney—Lady Washington.
7. I. Mulholland's (Independence) br. h. Osito, by McKinney—Twilight.
8. I. Zimmerman's (Portland, Or.) br. g. McBriar, by McKinney—Briar Bell.
9. S. H. Hoy's (Winters) br. g. McNally, by McKinney—by Alcazar.
10. G. P. McNeil's (Fresno) r. g. Dan W, by Hero—by Mambrino Prince.
11. E. J. Baldwin's (Los Angeles) blk. h. Santa Anita Star, by Guy Wilkes—Sulta B.

## SUMMARY.

Anzella (Geo. A. Kelly) .....	1	1	1
Dan W (J. R. Albertson) .....	3	2	2
Claudius (T. W. Barstow) .....	2	3	3
Osito (I. Mulholland) .....	4	4	4
Boydello (E. Lafferty) .....	dis.		

Time—2:17, 2:16, 2:15½.

## RACE No. 21—RUNNING.

For two-year-olds. Five and one half furlongs. Selling. Purse, \$250. Winner to be sold for \$700; 3 lbs. off for each \$100 to \$200. Beaten non-winners at this meeting allowed 5 lbs. Maidens, 10 lbs.

1. J. P. Atkins's ch. g. Glendenning (2), by St. Carlo—Glenlevit; 109 lbs.
2. W. B. Jennings & Co.'s b. c. Lapidus (2), by Imp. Star Ruby—Pearl V; 103 lbs.
3. Lone Stable's ch. g. Col. Smith (2), by Thornhill—Tillie S; 93 lbs.
4. J. D. Dunn's ch. c. Marelio (2), by Imp. Mariner—Fidelia; 103 lbs.
5. F. Lanigan's br. g. Hainault (2), by St. Carlos—Libbertifibbet; 106 lbs.
6. R. Hughes's b. g. Ah (2), by Santiago—Alasco; 93 lbs.

## SUMMARY.

Glendenning (Logue) .....	1
Lapidus (Ransch) .....	2
Marelio (Ross) .....	3

Time—1:08.

## RACE No. 22—RUNNING.

Sacramento State Fair Selling Stake; for three-year-olds and upward. One mile. Entrance \$10, to accompany nomination; \$20 additional for horses not declared by 4 p. m. day preceding the race; \$400 added by the Society, of which \$70 to second and \$30 to third. Winner to be sold at auction. If for \$2,000, to carry rule weight; if for less, 1 lb. allowed on each \$100 to \$1,000; thence 2 lbs. for each \$100 to \$400. A winner of a stake race or three or more races of any value after closing of stake, to carry 5 lbs. extra. Maidens allowed 7 lbs. Closed with 17 entries. Total value, \$670.

1. Burns & Waterhouse's b. g. Scotch Plaid (6), by Imp. Midlothian—Mottle; 106 lbs.
2. G. Summers & Co.'s ch. m. True Blue (5), by Duke of Norfolk—Carmen; 102 lbs.
3. Geo. Miller's br. c. Sir Hampton (4), by Water Cress—Imp. Lizzie Hampton; 100 lbs.

## SUMMARY.

Sir Hampton (Logue) .....	1
Scotch Plaid (Ransch) .....	2
True Blue (Holmes) .....	3

Time—1:40.

## RACE No. 23—RUNNING.

For three-year-olds and over that have not won two races this year. Seven and one half furlongs. All to be sold for \$200. 10 lbs. below the scale. Horses beaten at this meeting allowed 5 lbs.; and if four years old and over, 7 lbs.

1. J. McGovern's ch. m. Torsida (6), by Torso—Judith; 102 lbs.
2. J. Weber's b. m. Lizzella (a), by Morello—Lizzie Dunbar; 112 lbs.
3. Lone Stable's b. g. Casdale (5), by Imp. Favordale—Castalia; 105 lbs.
4. C. W. Carroll's b. f. Artilla (4), by Artillery—Duchess of Towers; 102 lbs.
5. Charles Earl's b. m. Coming Event (4), by Imp. Calvados—Katrinka; 102 lbs.
6. D. F. Cox's ch. m. Castaine (5), by Eotheon—Pearlfinder; 112 lbs.
7. J. Coffey's ch. g. Galanthus (3), by Imp. July—Snowdrop; 97 lbs.
8. Owen Bros.' ch. f. Conejo (4), by Royal Flush—Lady Emma; 102 lbs.
9. P. E. Smith's ch. m. Nettie Clark (4), by Rio Bravo—Apollinaris; 109 lbs.

## SUMMARY.

Torsida (J. McCarty) .....	1
Artilla (Burlingame) .....	2
Coming Event (Ross) .....	3

Time—1:35.

## RACE No. 24—RUNNING.

For all ages. Five eighths of a mile. Selling. Purse, \$200; of which \$30 to second and \$15 to third. Winner of three races in 1901 to carry 7 lbs. extra. Winner to be sold for \$200.

1. D. F. Cox's b. m. Clarando (5), by Clarandon—Voltando; 119 lbs.
2. E. Kaufman's ch. m. Katie Walcott (4), by Prince Royal—Penelope; 112 lbs.
3. J. L. Rector's ch. m. Lou Clievden (4), by Imp. Clievden—Miss Lou; 119 lbs.
4. H. L. Haskell's ch. g. Gold Baron (5), by Imp. Rayon d'Or—Ballerina; 122 lbs.
5. P. Sullivan's br. g. Almoner (5), by Midlothian—Charity; 122 lbs.
6. E. Carey's b. g. David S (3), by Midlothian—Taluda; 123 lbs.
7. S. F. Capp's b. c. Gypsy Boy (2), by Imp. True Briton—Gypsy Girl; 96 lbs.
8. F. D. Weir's br. g. Mike Strauss (4), by Iroquois—Gipsy; 129 lbs.
9. P. Moore's b. g. First Shot (4), by Foul Shot—Gratitude; 122 lbs.
10. H. Whitman's ch. g. Fine Shot (4), by Balgowan—Dignity II; 122 lbs.
11. Frank Allen's b. m. Blue Bell (a), by Prince of Norfolk—Gem of the Mountains; 126 lbs.

## SUMMARY.

Almoner (J. McCarty) .....	1
Katie Walcott (Bozeman) .....	2
Clarando (Russell) .....	3

Time—1:01¼.

FRIDAY, SEPTEMBER 6, 1901.

## RACE No. 25—TROTTING.

2:20 class. Purse, \$800. Mile heats, three in five.

1. Vendome Stock Farm's (San José) ch. g. Thomas R, by Iran Alto—by Yadrel.
2. A. Joseph's (San Francisco) ch. m. Floradora, by Sable Steinway—Pearl.
3. L. M. Clark's (Sacramento) b. h. Ouiboul, by Stamboul—Ouida.
4. D. J. Oglesby's (Carpentera) b. h. Almonada, by Eros—Maggie E.
5. Grace Bros.' (Santa Rosa) br. h. Ole, by Silas Skinner—Eleaven.
6. R. Freeman's (Red Bluff) b. g. Prince L, by Escort—Queen L.
7. George F. Jacobs's (Nevada City) br. g. Walling, by Waldstein—by Pasha.
8. C. Denison's (University) b. h. McKenna, by McKinney—Etta Wilkes.
9. F. C. Ward's (University) b. g. The Tout, by Apollo—by Raymond.
10. A. G. Gurnett's (San Francisco) gr. g. What Is It, by Direct—Lassie Jean.
11. James Dwain's (Salinas) b. g. Shelby, by Wilkes Moor—Queen.

## SUMMARY.

Almonada (H. Delaney).....	1	4	1	1
Thomas R (C. F. Bunch).....	2	1	7	2
The Tout (F. Ward).....	3	2	2	r. o.
Floradora (E. Lafferty).....	5	3	3	r. o.
Ouiboul (L. M. Clark).....	4	5	5	r. o.
Prince L (Wm. Brown).....	6	7	4	r. o.
Walling (J. Dwain).....	7	8	6	r. o.
Ole (J. Quinn).....	8	6	8	r. o.

Time—2:18¼, 2:19¼, 2:21¼, 2:25.

## RACE No. 26—TROTTING AND PACING.

Drummer's race. Purse, \$200. Mile heats, three in five.

1. H. A. Bell's (Sacramento) b. g. Abdine.
2. E. F. Peart's (Sacramento) b. g. Deacon
3. W. F. Peterson's (Sacramento) b. m. Little Maid.
4. Bert Wertheimer's (Sacramento) b. m. Pearl Sinclair.
5. L. S. Upson's (Sacramento) b. m. Polka Dot.

## SUMMARY.

Abdine (H. A. Bell).....	3	3	1	1	1
Little Maid (W. F. Peterson).....	1	1	2	2	2
Polka Dot (L. S. Upson).....	2	5	3	r. o.	
Pearl Sinclair (B. Wertheimer).....	5	2	5	r. o.	
Deacon (E. F. Peart).....	4	4	4	r. o.	

Time—2:27¼, 2:28¼, 2:24, 2:30, 2:48.

## RACE No. 27—RUNNING.

For maiden two-year-olds. Five furlongs. Purse, \$225; of which \$40 to second and \$15 to third. 5 lbs. below the scale. Horses beaten three or more times allowed 5 lbs.; and if they have not been placed second or third, 5 lbs. additional.

1. R. Hughes's b. f. Jennie Hughes (2), by Racine—Aurelia II; 110 lbs.
2. F. D. Weir's b. f. Flattered (2), by Emperor—Flattery; 105 lbs.
3. W. B. Jennings & Co.'s b. f. Luette (2), by Bassetlaw—Lulu; 105 lbs.
4. Lone Stable's b. f. Yankee Dame (2), by Yankee Doodle—Dame Marjorie; 110 lbs.
5. P. Guilfoyle's b. g. Redan (2), by Imp. Artillery—Princess Noretta; 108 lbs.
6. G. W. Snider & Co.'s ch. f. Quadra (2), by Prestonpans—Miss Belinda; 105 lbs.

## SUMMARY.

Quadra (Logue).....	1
Luette (Ransch).....	2
Redan (McNichols).....	3

Time—1:01¼.

## RACE No. 28—RUNNING.

For four-year-olds and over. One and one sixteenth miles. Selling. Purse, \$225; of which \$40 to second and \$15 to third. All to carry 112 lbs. Winner to be sold for \$200.

1. E. B. Smith's b. g. Sea Spray (a), by Mariner—Marinette; 112 lbs.
2. J. S. Campbell's b. g. El Mido (5), by Sir Modred—Ethel; 112 lbs.
3. Lone Stable's ch. h. Cromwell (a), by St. Blaise—Flavina; 112 lbs.
4. J. Coffey's ch. h. Jim McCleevy (5), by Linden—Verbena; 112 lbs.
5. J. Weber's b. m. Lizzella (a), by Morello—Lizzie Dunbar; 109 lbs.
6. P. Moore's ch. m. Alicia (a), by Malcolm—Viney; 109 lbs.
7. G. Miller's b. g. Decoy (4), by Imp. Deceiver—Nantucket; 112 lbs.
8. H. Whitman's b. g. Whaleback (5), by Imp. Duncombe—Orange Leaf; 112 lbs.
9. F. D. Weir's ch. g. Merops (5), by Brutus—Merope; 112 lbs.
10. B. F. Hobart's ch. g. Limber Jim (a), by Snuff-Box—Mildred; 112 lbs.

## SUMMARY.

Cromwell (Russell) .....	1
Limber Jim (Hobart) .....	2
Whaleback (Burlingame) .....	3

Time—1:49.

## RACE No. 29—RUNNING.

For maiden two-year-olds. Five furlongs. Purse, \$225; of which \$40 to second and \$15 to third. 5 lbs. below the scale. Horses beaten three or more times allowed 5 lbs.; and if they have not been placed second or third, 5 lbs. additional.

1. Neil & Mackey's ch. c. Charette (2), by Imp. Crighton—Tatina; 100 lbs.
2. F. Burke's b. g. Wandering Boy (2), by Brutus—Wandering Nun of Argyle; 103 lbs.
3. W. D. Sink, Jr.'s b. g. Dawson (2), by Maxio—Easter; 105 lbs.
4. P. Moore's b. f. Isar (2), by Foul Shot or Little Minch—Virgie D; 100 lbs.
5. J. S. Campbell's ch. g. Resin (2), by Emperor of Norfolk—Espiritu Santa; 103 lbs.
6. J. L. Clayton & Co.'s ch. c. Senator Bruce (2), by Amigo—Indianola; 108 lbs.
7. J. McGovern's b. f. Mariosa (2), by Imp. Mariner—Shannon Rose; 110 lbs.

## SUMMARY.

Dawson (Logue) .....	1
Wandering Boy (Howson) .....	2
Senator Bruce (Bozeman) .....	3

Time—1:02.

## RACE No. 30—RUNNING.

For three-year-olds and over, beaten non-winners at this meeting that have not won two races in 1901. Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third; 10 lbs. below the scale. Winner to be sold for \$200.

1. Thomas Latta's b. g. Pongo (6), by El Rio Rey—Ogalena; 112 lbs.
2. T. Rector's ch. m. Mountain Dew (5), by Blazes—Alice B; 109 lbs.
3. Owen Bros.' ch. f. Conejo (4), by Royal Flush—Lady Emma; 109 lbs.
4. Charles Earl's b. m. Coming Event (4), by Imp. Calvados—Katrinka; 109 lbs.
5. William Cahill's br. c. Lief Prince (3), by Prince Lief or Bermuda—Natalie; 106 lbs.
6. W. B. Jennings's ch. g. Canderos (4), by Candlemas—Hinda Dwyer; 112 lbs.
7. E. G. McConnell's ch. m. Lost Girl (5), by Sobrante—Nellie K; 109 lbs.
8. J. D. Dunn's br. g. Pegalong (3), Imp. Crighton—Sweet Peggy; 106 lbs.

## SUMMARY.

Coming Event (Ross) .....	1
Canderos (Ransch) .....	2
Lost Girl (Russell) .....	3

Time—1:14¾.

SATURDAY, SEPTEMBER 7, 1901.

## RACE No. 31—PACING.

2:17 class. Purse, \$800. Mile heats, three in five.

1. Vendome Stock Farm's (San José) ch. m. Our Boy's Sister, by Baywood—by Wapsie.
2. G. Trank's (Chico) b. g. Harry J, by Reavis's Steinway—Jennie June.
3. W. G. Layng's (San Francisco) b. g. Sir Albert S, by Diablo—Effe Logan.
4. Ed. Kavanaugh's (Vallejo) ch. h. Gaff Topsail, by Diablo—Belle.
5. J. A. Lafferty's (Oakland) br. h. Advertiser, by Advertiser—by Steinway.
6. Ed. Graser's (Riverside) ch. m. Nellie I, by Gossiper.
7. C. W. Whitehead's (Stockton) ch. g. Topsy, by Delphi—Sister to Astor.
8. R. Freeman's (Red Bluff) b. m. Banker's Daughter, by Arthur Wilkes—Sunflower.
9. A. M. Leeper's (Reno) b. g. Wilfred L, by Bozero—Lady H.
10. N. D. Harrison's (Los Angeles) br. m. Little Maid, by Rockwood—by Hambletonian Mambrino.
11. W. Vanderhurst's (Salinas) b. m. Diablita, by Diablo.
12. Valencia Stock Farm's (Los Angeles) br. h. Direct Heir, by Direct—Bet Madison.
13. J. H. Thompson's (Riverside) ch. g. El Diablo, by Diablo—Elwood.

## SUMMARY.

Sir Albert S (J. Groom).....	1	1	1
El Diablo (C. Farrar).....	2	2	2
Our Boy's Sister (C. F. Bunch).....	3	3	3
Gaff Topsail (J. Smith).....	4	4	dis.
Diablita (J. Dwin).....	5	dis.	

Time—2:11½, 2:10¾, 2:10¼.

## RACE No. 31A—RUNNING.

Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Winner to be sold for \$300.

1. T. E. McLaughlin's ch. g. Mike Rice (a), by J. H. Fenton—Mrs. McAllister; 115 lbs.
2. E. G. McConnell's ch. m. Lost Girl (a), by Sobrante—Nellie K; 105 lbs.
3. E. Carey's b. f. Catherine Bravo (3), by Rio Bravo—Catherine B; 102 lbs.
4. J. S. Campbell's b. g. Burdock (4), by Matt Byrnes—Alva Daly; 102 lbs.
5. J. L. Rector's ch. m. Lou Clievden (4), by Imp. Clievden—Miss Lou; 100 lbs.
6. W. B. Jennings & Co.'s b. c. Lapidus (2), by Imp. Star Ruby—Pearl V; 100 lbs.
7. J. Webb's br. g. San Augustine (5), by Emperor of Norfolk—The Hook Blind; 100 lbs.
8. P. Donalache's b. c. Sol (2), by Imp. Trentola—Ursula; 90 lbs.
9. P. E. Smith's b. m. Little Sister (a), by Imp. Friar Tuck—Lowland Lass; 90 lbs.
10. D. F. Cox's b. m. Clarando (5), by Clarandon—Voltande; 108 lbs.

## SUMMARY.

Lapidus (Ransch).....	1
Lou Clievden (Howson).....	2
Burdock (Ashley).....	3

Time—1:14¾.

## RACE No. 32—RUNNING.

For three-year-olds and over. Six furlongs. Purse, \$250; of which \$40 to second and \$20 to third. Winner to be sold for \$600; if for less, 3 lbs. allowed on each \$100 down to \$200. Beaten non-winners at this meeting allowed 5 lbs.

1. F. D. Weir's b. f. Mike Strauss (4), by Iroquois—Gypsy; 105 lbs.
2. G. Burger's b. f. Mamie Hildreth (3), by Thornhill—Mamie H; 96 lbs.
3. J. Martin, Jr.'s b. m. Phlegon (4), by Imp. Piccolo—Little Rose; 105 lbs.
4. W. L. Stanfield's br. m. Kitty Kelly (4), by Apache—Playtoy; 102 lbs.
5. C. Young's ch. f. Eonic (3), by Eon—Mermaid; 99 lbs.
6. P. Crowley's br. m. Gusto (4), by Brutus—Irish Lass; 105 lbs.

## SUMMARY.

Eonic (Ransch).....	1
Mamie Hildreth (Howson).....	2
Mike Strauss (McDermott).....	3

Time—1:14¾.



## RACE No. 33—RUNNING.

Vincter Stake; for three-year-olds and over. One mile. Entrance \$10, to accompany nomination; \$20 additional for horses not declared by 4 p. m. day preceding race; with \$400 added by the Society, of which \$70 to second and \$30 to third. Stake to be named after winner if Vincter's time (1:40) is beaten. A non-winner of a stake race in 1901, or a race of the value of \$500, allowed, if a non-winner of five races other than selling races, 5 lbs. Maidens, 7 lbs. additional. Closed with 14 entries. Total value, \$650.

1. W. B. Jennings & Co.'s b. m. Andrisa (4), by Imp. St. Andrew—Fanny Louise; 114 lbs.
2. R. Wilson's ch. g. Byron Rose (3), by Ducat—Rose Magenta; 107 lbs.
3. W. B. Jennings & Co.'s b. h. Vesuvian (4), by St. Andrew—Hot Springs; 122 lbs.
4. T. J. Fields's b. g. Rey Dare (3), by El Rio Rey—Lady Dare; 107 lbs.
5. L. A. Blasingame's b. g. Graftor (3), by Cicero—Leapyear; 107 lbs.
6. P. Donalache's b. c. Wardman (3), by Tammany—Belinda; 107 lbs.

## SUMMARY.

Vesuvian (Ransch).....	1
Byron Rose (Logue).....	2
Rey Dare (Russell).....	3

Time—1:42.

## RACE No. 34—RUNNING.

Futurity Stake; for foals of 1899. Six furlongs. \$1,000 added. Closed with 31 entries, of which 8 were refunded. Total value of stake, \$2,250.

1. J. Weber & Co.'s b. f. Torso Maid (2), by Torso—Happy Maiden; 115 lbs.
2. W. B. Sink, Jr.'s b. c. Royalty (2), by Imp. Cavalier—Empress of Norfolk; 115 lbs.
3. G. Summers & Co.'s br. g. Water Scratch (2), by Imp. Water Cress—Helen Scratch; 118 lbs.
4. Burns & Waterhouse's b. f. Doreen (2), by Torso—Decoy Duck; 115 lbs.
5. A. J. Stemler's b. f. Divina (2), by Bassetlaw—Angelique; 115 lbs.

## SUMMARY.

Divina (Russell).....	1
Water Scratch (Foucon).....	2
Doreen (Ransch).....	3

Time—1:14.

## RACE No. 34A—RUNNING.

Handicap for all ages. Five furlongs. Selling. Purse, \$200; of which \$20 to second and \$10 to third.

1. J. Whalen's b. m. Swiftwater (4), by Imp. Candlemas—Repleta; 105 lbs.
2. H. Whiteman's ch. g. Fine Shot (4), by Balgowan—Dignity; 105 lbs.
3. P. Moore's b. g. First Shot (4), by Imp. Foul Shot—Gratitude; 105 lbs.
4. H. L. Haskell's ch. g. Gold Baron (5), by Imp. Rayon d'Or—Ballerina; 105 lbs.
5. E. B. Smith's b. g. Sea Spray (a), by Imp. Mariner—Marinette; 105 lbs.
6. J. D. Dunn's br. g. Pegalong (3), by Imp. Crighton—Sweet Peggy; 99 lbs.
7. T. Rector's ch. m. Mountain Dew (5), by Blazes—Alice D; 105 lbs.
8. P. E. Smith's ch. m. Nettie Clark (4), by Rio Bravo—Apollinaris; 105 lbs.
9. Frank Allen's b. m. Blue Bell (a), by Prince of Norfolk—Gem of the Mountains; 105 lbs.
10. L. Tryon's b. m. Galena (4), by Imp. Brutus—Picnic; 105 lbs.
11. Murray & Collins's ch. g. Toribio (6), by Apache—Marion; 105 lbs.

## SUMMARY.

Fine Shot (Burlingame).....	1
Toribio (Russell).....	2
First Shot (Ransch).....	3

Time—1:01¼.

## RACE No. 35—RUNNING.

For four-year-olds and over. One and one sixteenth miles. Selling. Purse, \$250; of which \$40 to second and \$20 to third. Winner to be sold for \$700; if for less, 3 lbs. on each \$100 down to \$400; then 5 lbs. on each \$100 down to \$100. A winner of four races in 1901 not to be entered for less than \$400.

1. P. Moore's ch. f. Alicia (a), by Malcolm—Viney; 95 lbs.
2. P. Sheridan's ch. g. Frank Duffy (4), by Montana—Josephine; 103 lbs.

3. J. McGovern's ch. m. Torsida (6), by Torso—Judith; 105 lbs.
4. Walter Maben's b. m. Miss Vera (4), by Amigo 8—Fame; 100 lbs.
5. B. Hobart's b. g. Pilot (4), by Morello—Adelaide; 100 lbs.
6. Wm. Cahill's b. g. Rinaldo (6), by Leonatus—Dahlia; 98 lbs.

## SUMMARY.

Torsida (Russell).....	1
Pilot (Burlingame).....	2
Miss Vera (Howson).....	3

Time—1:48¼.

## MONDAY, SEPTEMBER 9, 1901.

## RACE No. 36—TROTTING.

The Stanford Stakes for 1901; for foals of 1898. Mile heats, three in five. Entries closed May 15, 1899. \$50 entrance, of which \$5 accompanied nomination May 15, 1899; \$5 January 1, 1900; \$10 January 1, 1901; \$10 July 1, 1901, and \$20 on the tenth day before the first day of the State Fair of 1901. \$300 added by the Society. The stakes and added money to be divided 50, 25, 15, and 10 per cent. Total value, \$1,260.

1. W. Hogoboom's (Marysville) br. c. Charles H, by Lynmont—Elmorene.
2. P. W. Lee's (Oakland) br. f. Fluey, by Or Lee—Fleety.
3. Thomas S. Manning's (Avalon) b. c. Commander Muckle, by McKinney—Cheerful.
4. J. Doran's (Oakland) b. f. Della McCarty, by McKinney—Lady C.
5. C. A. Owen's (Fresno) ch. c. Lee Roy, by Waldstein—Zadie McGregor.
6. Santa Rosa Stock Farm's (Santa Rosa) blk. f. Almaretta, by L. W. Russell—Flora Allen.
7. Santa Rosa Stock Farm's (Santa Rosa) b. f. Lady Russell, by L. W. Russell—Pansy.

## SUMMARY.

Almaretta (G. Ramage).....	1	1	1
Della McCarty (J. Doran).....	4	2	2
Commander Muckle (F. Ward).....	2	3	4
Charles H (W. Hogoboom).....	5	4	3
Lee Roy (C. A. Owen).....	3	5	dis.
Fluey (P. W. Lee).....	dis.		

Time—2:28¾, 2:27, 2:26.

## RACE No. 37—TROTTING.

Purse, \$400. Mile heats, three in five.

1. I. Mulholland's (Independence) b. g. Osito, by McKinney—Twilight.
2. G. F. Anderson's (San José) b. g. Cladius, by Nutwood Wilkes—Fannie Menlo.
3. S. A. Hooper's (Yountville) b. h. Alta Vela, by Electioneer—Lorita.
4. T. J. Crowley's (San Francisco) b. h. Boydello, by Boydell—by Durango Chief.
5. L. M. Clark's (Sacramento) b. h. Ouiboul, by Stamboul—Ouida.

## SUMMARY.

Claudius (T. Barstow).....	1	1	1
Osito (I. Mulholland).....	2	2	2
Alta Vela (S. A. Hooper).....	4	3	4
Ouiboul (L. M. Clark).....	3	4	5
Boydello (E. Lafferty).....	5	5	3

Time—2:16¼, 2:16½, 2:18.

## RACE No. 38—RUNNING.

For four-year-olds and over, non-winners of five races in 1901. Seven and one half furlongs. Selling. Purse, \$250; of which \$40 to second and \$20 to third. Winner to be sold for \$600; if for less, 4 lbs. on each \$100 down to \$200. Beaten non-winners since June 10th, allowed 5 lbs.

1. B. F. Hobart's ch. g. Limber Jim (a), by Snuff-Box—Mildred; 118 lbs.
2. F. D. Weir's ch. g. Merops (5), by Brutus—Merope; 105 lbs.
3. Walter Maben's b. m. Miss Vera (4), by Amigo—Fame; 103 lbs.
4. J. A. Gibson's br. g. J. Boggs (4), by Imp. Friar Tuck—Czarina; 110 lbs.

5. J. S. Campbell's b. g. Burdock (4), by Imp. Matt Byrnes—Alva Daly; 106 lbs.  
 6. Charles Earl's b. m. Coming Event (4), by Imp. Calvados—Katrinka; 103 lbs.

## SUMMARY.

Merops (Hoar) .....	1
Coming Event (Ross) .....	2
Miss Vera (Burlingame) .....	3

Time—1:34¾.

## RACE No. 39—RUNNING.

For three-year-olds and over. One mile. Selling. Purse, \$250; of which \$40 to second and \$20 to third. Three-year-olds to carry 106 lbs.; four-year-olds and over, 112 lbs. All to be sold for \$100.

- George Miller's b. g. Decoy (4), by Imp. Deceiver—Nantucket; 112 lbs.
- J. Coffey's ch. h. Jim McCleevy (5), by Linden—Verbena; 112 lbs.
- D. Morgan's b. g. McFarlane (6), by Imp. Mariner—Moonlight; 112 lbs.
- H. Whitman's b. g. Whaleback (5), by Imp. Duncombe—Orange Leaf; 112 lbs.
- Wm. Cahill's b. g. Rinaldo (6), by Leonatus—Dahlia; 112 lbs.
- Miss M. O'Connell's ch. g. Boardman (5), by St. Charles or Willful—Rosewood; 112 lbs.
- J. S. Campbell's b. g. El Mido (5), by Sir Modred—Ethel; 112 lbs.

## SUMMARY.

Whaleback (Burlingame) .....	1
Jim McCleevy (Ransch) .....	2
Rinaldo (Hoar) .....	3

Time—1:42¾.

## RACE No. 40—RUNNING.

For two-year-olds that have not won two races in 1901. Five furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. 5 lbs. below scale. Non-winners of a race allowed 5 lbs.; if beaten at this meeting, 5 lbs. additional. Winner to be sold for \$300.

- G. W. Snider & Co.'s ch. f. Quadra (2), by Imp. Prestonpans—Miss Belinda; 110 lbs.
- W. B. Jennings & Co.'s b. f. Lulette (2), by Bassettlaw—Lulu; 100 lbs.
- S. F. Clapp's b. c. Gypsy Boy (2), by Imp. True Briton—Gypsy Girl; 108 lbs.
- La Sista Ranch's b. g. Wandering Boy (2), by Brutus—Wandering Nun of Argyle; 103 lbs.
- J. Coffey's ch. f. Evea G (2), by Imp. Juvenal—Sister Geneva; 110 lbs.
- F. D. Weir's br. f. Flattered (2), by Emperor—Flattery; 105 lbs.
- L. A. Blasingame's b. c. Porous (2), by Wernberg—Chevy Chase; 113 lbs.
- W. B. Sink Jr.'s b. c. Dawson (2), by Maxio—Easter; 113 lbs.
- G. Summers & Co.'s ch. g. Rubina (2), by Imp. Star Ruby—Torsina; 113 lbs.
- Lone Stable's b. f. Yankee Dame (2), by Yankee Doodle—Dame Majorie; 100 lbs.

## SUMMARY.

Lulette (Ransch) .....	1
Evea G (Tullett) .....	2
Quadra (Russell) .....	3

Time—1:02.

## RACE No. 41—RUNNING.

For three-year-olds and over, beaten non-winners at this meeting. Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Three-year-olds to carry 109 lbs.; four-year-olds and over, 112 lbs. Winner to be sold for \$200.

- E. Kaufman's ch. m. Katie Walcott (4), by Prince Royal—Penelope; 109 lbs.
- L. Tryon's b. m. Galene (4), by Imp. Brutus—Picnic; 112 lbs.
- F. D. Weir's br. g. Mike Strauss (4), by Iroquois—Gypsy; 112 lbs.
- C. W. Carroll's b. f. Artilla (4), by Artillery—Duchess of Towers; 109 lbs.
- W. B. Jennings & Co.'s ch. g. Canderos (4), by Candlemas—Hinda Dwyer; 112 lbs.

6. G. W. Snider & Co.'s ch. m. Vantine (4), by Imp. Anchorite—Vestina; 109 lbs.  
 7. John Lodge's br. f. Little Gun (3), by Imp. Artillery—Queen Kapiolani; 109 lbs.

## SUMMARY.

Mike Strauss (Hoar) .....	1
Vantine (Russell) .....	2
Artilla (Burlingame) .....	3

Time—1:15.

## TUESDAY, SEPTEMBER 10, 1901.

## RACE No. 42—TROTTING.

2:15 class. Purse, \$400. Mile heats, three in five.

1. J. Depoister's (Los Angeles) br. g. Peter Jackson, by Designer—by Abbottsford.  
 2. J. Cincello's (San Francisco) br. g. Puerto Rico, by Sable Wilkes—Mamie Kohl.  
 3. Vendome Stock Farm's (San José) s. g. Thomas R., by Iran Alto—Yadrel.  
 4. John Quinn's (Santa Rosa) blk. h. Black Bart, by Robin—by Williamson's Belmont.  
 5. G. W. Kingsbury's (San Francisco) r. g. Lynall, by Lynmont—Balance All.  
 6. G. F. Jacobs's (Nevada City) br. g. Walling, by Waldstein—by Pasha.

## SUMMARY.

Thomas R. (C. F. Bunch) .....	2	1	1	1
Lynall (G. W. Kingsbury) .....	1	5	3	2
Puerto Rico (J. Cincello) .....	3	2	2	r.o.
Black Bart (J. Quinn) .....	5	3	4	r.o.
Walling (J. Dwain) .....	4	4	5	r.o.
Peter Jackson (J. Depoister) .....	6	6	6	r.o.

Time—2:25, 2:20¾, 2:19, 2:25¼.

## RACE No. 43—TROTTING.

Road race for members of the Sacramento Driving Club. Mile heats, three in five.

1. F. E. Wright's (Sacramento) br. h. Baby Button, by Alexander Button—Algerine.  
 2. L. S. Upson's (Sacramento) br. m. Regina F., by Alto Rex—by Nephew.  
 3. F. Ruhstaller, Jr.'s (Sacramento) b. g. Monroe B., by Monroe.  
 4. Charles Paine's (Sacramento) b. g. Pio, by Fern—Sunflower.  
 5. Wm. Trust's (Sacramento) br. g. Candy Joe, by Berlin.

## SUMMARY.

Monroe B (F. Ruhstaller, Jr.) .....	2	1	1	1
Regina F (L. S. Upson) .....	1	2	2	2
Pio (C. Paine) .....	3	3	3	3
Baby Button (F. E. Wright) .....	4	4	4	4
Candy Joe (Wm. Trust) .....				dis.

Time—2:22, 2:19¾, 2:23¼, 2:23.

## RACE No. 44—RUNNING.

For two-year-olds that have not won at this meeting. Five furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Winner to be sold for \$700; if for less, 2 lbs. on each \$100 down to \$200. Horses beaten at this meeting and not placed second, allowed 3 lbs.; not placed third, 5 lbs.

1. Lone Stable's ch. g. Colonel Smith (2), by Thornhill—Tillie S; 103 lbs.  
 2. G. Summers & Co.'s b. g. Tyrannus (2), by Imp. Star Ruby—Tyranny; 108 lbs.  
 3. J. A. Weber's br. f. Torso Maid (2), by Torso—Happy Maiden; 102 lbs.  
 4. J. P. Atkin's b. g. Jarretiere d'Or (2), by Golden Garter—Ricardo; 114 lbs.  
 5. W. B. Sink, Jr.'s br. g. Royalty (2), by Imp. Cavalier—Empress of Norfolk; 105 lbs.

## SUMMARY.

Jarretiere d'Or (Ruiz) .....	1
Tyrannus (Hoar) .....	2
Royalty (Howson) .....	3

Time—1:01¼.

## RACE No. 45—RUNNING.

For three-year-olds and over, beaten non-winners at this meeting. One and one sixteenth miles. Selling. Three-year-olds to carry 105 lbs.; four-year-olds and over, 112 lbs. 3 lbs. allowed for each time beaten at this meeting; if beaten two or more times and not placed second or third, allowed 5 lbs. additional. Winner to be sold for \$200.

1. P. Sheridan's ch. g. Frank Duffy (4), by Malcolm—Viney; 109 lbs.
2. C. W. Carroll's b. f. Artilla (4), by Artillery—Duchess of Towers; 109 lbs.
3. J. Coffey's ch. g. Galanthus (3), by July—Snowdrop; 94 lbs.
4. B. S. Hobart's b. g. Pilot (4), by Morello—Adelaide; 109 lbs.
5. Wm. Cahill's b. g. Rinaldo (6), by Leonatus—Dahlia; 103 lbs.
6. E. G. McConnell's ch. m. Lost Girl (5), by Sobrante—Nellie K; 100 lbs.
7. Lone Stable's br. g. Casdale (5), by Favordale—Castalia; 101 lbs.
8. T. Kelly's ch. m. Castaine (5), by Eotheon—Pearlfinder; 109 lbs.
9. J. Weber's b. m. Lizzella (a), by Morello—Lizzie Dunbar; 109 lbs.
10. P. Moore's ch. f. Alicia (a), by Malcolm—Viney; 98 lbs.

## SUMMARY.

Alicia (Ransch) .....	1
Lizzella (Ruiz) .....	2
Galanthus (Hall) .....	3

Time—1:48½.

## RACE No. 46—RUNNING.

Special. One mile. Purse, \$400; of which \$70 to second and \$30 to third.

1. Burns & Waterhouse's b. g. Scotch Plaid (6), by Imp. Midlothian—Mottle; 105 lbs.
2. Owen Bros.' b. f. Flush of Gold (3), by Royal Flush—Gold Cup; 104 lbs.
3. G. Miller's br. c. Sir Hampton (4), by Water Cress—Imp. Lizzie Hampton; 107 lbs.
4. T. J. Field's b. g. Rey Dare (3), by El Rio Rey—Lady Dare; 92 lbs.
5. R. Wilson's ch. g. Byron Rose (3), by Ducat—Rose Magenta; 92 lbs.

## SUMMARY.

Flush of Gold (Logue) .....	1
Scotch Plaid (Ransch) .....	2
Sir Hampton (Russell) .....	3

Time—1:40.

## RACE No. 47—RUNNING.

For three-year-olds and over that have not won three races at this meeting. Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Three-year-olds to carry 109 lbs.; four-year-olds and over, 112 lbs. Those beaten and not placed second or third, allowed 3 lbs. for each time beaten at this meeting. Winner to be sold for \$200.

1. W. P. Hayes's b. g. Ravino (3), by Racine—Precious; 109 lbs.
2. T. E. McLaughlin's ch. g. Mike Rice (a), by J. H. Fenton—Mrs. McAllister; 106 lbs.
3. Burns & Waterhouse's ch. g. Rollick (3), by Take Notice—Happy Maiden; 109 lbs.
4. R. E. Dolan's ch. g. Howard (a), by Tyrant—Mayetta; 112 lbs.
5. P. Moore's b. g. First Shot (4), by Foul Shot—Gratitude; 112 lbs.
6. P. Sullivan's b. g. Almoner (5), by Midlothian—Charity; 112 lbs.
7. Wm. Cahill's b. g. Prestidigitator (4), by Russell—Active; 109 lbs.

## SUMMARY.

Rollick (Ransch) .....	1
Mike Rice (Tullett) .....	2
Prestidigitator (Hoar) .....	3

Time—1:14¾.

## RACE No. 47A—RUNNING.

For all ages, beaten non-winners at this meeting. Five furlongs. Selling. Purse, \$200; of which \$40 to second and \$15 to third. Two-year-olds to carry 97 lbs.; three-year-olds, 110 lbs.; four-year-olds and over, 115 lbs. Those beaten two or more times and not placed second, allowed 5 lbs. All to be sold for \$100.

1. F. Allen's b. m. Blue Bell (4), by Prince of Norfolk—Gem of the Mountains; 107 lbs.
2. E. Carey's b. f. Catherine Bravo (3), by Rio Bravo—Catherine B; 102 lbs.

3. L. Tryon's b. m. Galene (4), by Imp. Brutus—Picnic; 107 lbs.
4. H. Haskell's ch. g. Gold Baron (5), by Imp. Rayon d'Or—Ballerina; 110 lbs.
5. F. S. Capps's ch. c. Gypsy Boy (2), by Imp. True Briton—Gypsy Girl; 92 lbs.
6. W. B. Jennings & Co.'s ch. g. Canderos (4), by Candlemas—Hinda Dwyer; 115 lbs.
7. D. F. Cox's b. m. Clarando (5), by Clarandon—Voltando; 107 lbs.
8. T. Rector's ch. m. Mountain Dew (5), by Blazes—Alice D; 106 lbs.
9. C. W. Carroll's b. f. Chaste (3), by Jim Gore—Imp. British Blue Blood; 107 lbs.

## SUMMARY.

Clarando (Russell) .....	1
Canderos (Ransch) .....	2
Catherine Bravo (Logue) .....	3

Time—1:01.

## WEDNESDAY, SEPTEMBER 11, 1901.

## RACE No. 48—PACING.

2:25 class. Purse, \$800. Mile heats, three in five.

1. Vendome Stock Farm's (San José) b. m. China Maid, by McKinney—by Onward.
2. Santa Rosa Stock Farm's (Santa Rosa) ch. g. B. S. Dillon, by Sydney Dillon—Biscara.
3. Valencia Stock Farm's (Los Angeles) br. g. Direct Heir, by Direct—Bet Madison.
4. W. S. Maben's (Los Angeles) b. m. Electra, by Silkwood—by Woolsey.
5. George Trank's (Chico) b. g. Harry J, by Reavis's Steinway—Jennie June.
6. Reidy & Johnson's (Red Bluff) br. m. Celmar, by Falrose—by Killarney.
7. J. A. Lafferty's (Oakland) br. h. Advertiser, by Advertiser—by Steinway.
8. Ed. Graser's (Riverside) ch. m. Nellie I, by Gossiper.
9. C. W. Whitehead's (Stockton) ch. g. Toppy, by Delphi—Sister to Astor.
10. R. Freeman's (Red Bluff) b. m. Banker's Daughter, by Arthur Wilkes—Sunflower.
11. T. C. Cabney's (Eureka) b. g. Al Sandy, by Wayland W—by Overland.
12. A. M. Leeper's (Reno) br. g. Wilfred L, by Bozero—Lady H.
13. W. Vanderhurst's (Salinas) b. f. Diablita, by Diablo.
14. John Donahue's (Riverside) blk. g. Midnight, by Nutford—by Grandee.

## SUMMARY.

Toppy (C. Whitehead) .....	3	1	1	1
Banker's Daughter (Wm. Brown) .....	1	3	4	2
Midnight (D. Donahue) .....	2	2	2	r. o.
Harry J (W. Donathan) .....	4	5	3	r. o.
Diablita (J. Dvain) .....	6	4	6	r. o.
Wilfred L (R. C. Leeper) .....	5	6	5	r. o.

Time—2:13¼, 2:16, 2:16¼, 2:20.

## RACE No. 49—TROTTING.

2:24 class. Purse, \$500. Mile heats, three in five.

1. C. Denison's (University) blk. h. McKenna, by McKinney—Etta Wilkes.
2. D. F. Oglesby's (Carpenteria) b. h. Almonada, by Eros—by Nutwood.
3. R. Freeman's (Red Bluff) b. g. Prince L, by Escort—Queen L.
4. Vendome Stock Farm's (San José) b. m. Nora McKinney, by McKinney—by Dexter Prince.
5. S. J. Dunlop's (Los Angeles) b. m. Lucy G, by Junio—Lottie.

## SUMMARY.

Nora McKinney (C. F. Bunch) .....	1	1	2	1
McKenna (F. Ward) .....	4	4	1	2
Prince L (William Brown) .....	3	2	3	r. o.
Almonada (Delaney) .....	2	3	4	r. o.

Time—2:17¼, 2:18¼, 2:18¼, 2:21.

## RACE No. 50—RUNNING.

For maiden two-year-olds. Five furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. 10 lbs. below the scale. Horses that have not been placed one, two, three, allowed 5 lbs. Winner to be sold for \$200.

1. G. W. Snider's b. f. Mariosa (2), by Imp. Mariner—Shannon Rose; 100 lbs.
2. Neil & Mackey's ch. c. Charette (2), by Imp. Crighton or Eolo—Fatina; 103 lbs.

3. Lone Stable's b. f. Yankee Dame (2), by Yankee Doodle—Dame Marjorie; 100 lbs.
4. F. D. Weir's b. f. Flattered (2), by Emperor—Flattery; 105 lbs.
5. R. Hughes's ch. f. Jennie Hughes (2), by Racine—Aurelia II; 100 lbs.
6. Thomas Fox's ch. c. George Clark (2), by Torso—City Girl; 103 lbs.

## SUMMARY.

George Clark (Russell).....	1
Flattered (Hoar).....	2
Jennie Hughes (Logue).....	3

Time—1:02¾.

## RACE No. 51—RUNNING.

For three-year-olds and upward, non-winners of two races this year. Six furlongs. 10 lbs. below the scale. Non-winners that have started three or more times and have not been placed third, allowed 7 lbs. All to be sold for \$200.

1. Wm. Cahill's br. c Lief Prince (3), by Prince Lief or Bermuda—Natalie; 106 lbs.
2. P. E. Smith's b. m. Little Sister (a), by Imp. Friar Tuck—Lowland Lass; 102 lbs.
3. E. G. McConnell's ch. m. Lost Girl (5), by Sobrante—Nellie K; 109 lbs.
4. R. E. Dolan's ch. g. Howard (a), by Tyrant—Mayetta; 112 lbs.
5. T. Rector's ch. m. Mountain Dew (4), by Blazes—Alice B; 109 lbs.
6. M. Kane's b. g. Rio Colorado (4), by Rio Bravo—Commotion; 112 lbs.
7. J. Webb's br. g. San Augustine (5), by Emperor of Norfolk—The Hook Blind; 112 lbs.
8. G. L. Richards's blk. m. Pidalia (4), by Idaliu—Piquant; 102 lbs.

## SUMMARY.

Little Sister (Hoar).....	1
San Augustine (Gaffney).....	2
Pidalia (Howson).....	3

Time—1:15.

## RACE No. 52—RUNNING.

For three-year-olds and over. Seven and one half furlongs. Selling. Purse, \$250; of which \$40 to second and \$20 to third. Three-year-olds to carry 107 lbs.; four-year-olds and over, 112 lbs. Winner to be sold for \$200.

1. Lone Stable's ch. g. Cromwell (a), by St. Blaise—Flavina; 112 lbs.
2. G. Burger's b. f. Mamie Hildreth (3), by Thornhill—Mamie H; 103 lbs.
3. F. D. Weir's ch. g. Merops (5), by Brutus—Merope; 112 lbs.
4. D. Morgan's br. g. McFarlane (a), by Imp. Mariner—Moonlight; 112 lbs.
5. P. Donalache's b. c. Wardman (3), by Tammany—Belinda; 107 lbs.
6. Charles Earl's b. m. Coming Event (4), by Imp. Calvados—Katrinka; 109 lbs.

## SUMMARY.

Coming Event (Ross).....	1
Merops (Hoar).....	2
Mamie Hildreth (Howson).....	3

Cromwell left at post.

Time—1:34¼.

## RACE No. 53—RUNNING.

For two-year-olds, non-winners of two races. Five furlongs. Purse, \$225; of which \$40 to second and \$15 to third. Maidens allowed 5 lbs. If beaten at this meeting, 5 lbs. additional.

1. J. L. Clayton & Co.'s ch. c. Senator Bruce (2), by Amigo—Indianola; 108 lbs.
2. W. B. Sink, Jr.'s br. g. Royalty (2), by Imp. Cavalier—Empress of Norfolk; 118 lbs.
3. P. Guilfoyle's ch. g. Redan (2), by Imp. Artillery—Princess Noretta; 108 lbs.
4. P. Smith's ch. g. Fred Atterbury (2), by Bowling Green—Kittie Waddle; 108 lbs.
5. P. Donalache's b. g. Sol (2), by Imp. Trentola—Ursula; 118 lbs.
6. W. B. Jennings & Co.'s b. f. Lulette (2), by Bassettlaw—Lulu; 115 lbs.
7. G. Summers & Co.'s ch. g. Rubina (2), by Imp. Star Ruby—Torsina; 118 lbs.

## SUMMARY.

Royalty (Ruiz).....	1
Redan (McNichols).....	2
Lulette (Ransh).....	3

Time—1:01¾.

THURSDAY, SEPTEMBER 12, 1901.

## RACE No. 54—PACING.

2:13 class. Purse, \$1,000. Mile heats, three in five.

1. H. M. Dunlap's (San Francisco) b. g. King Cadenza, by Steinway—Empress
2. Wm. G. Layng's (San Francisco) b. g. Sir Albert S, by Diablo—Effie Logan.
3. Ed. Kavanaugh's (Vallejo) ch. h. Gaff Topsail, by Diablo—Belle.
4. Ed. Graser's (Riverside) ch. m. Nellie I, by Gossiper.
5. C. W. Whitehead's (Stockton) blk. h. Delphi, by Director—Etta.
6. J. D. Heines's (San Francisco) br. h. John A, by Wayland W—Lady Moor.
7. S. C. Tryon & Co.'s (Sacramento) blk. m. Margaretta, by Direct—Rosetta A.
8. R. R. Brown's (Oakland) b. g. Doc Wilkes, by Mambrino Wilkes.
9. J. B. Iverson's (Salinas) ch. m. Dictatress, by Dictatus—Salinas Belle.
10. C. W. Main's (Corona) b. m. Queen R, by Redondo—by Adrian Wilkes.
11. J. H. Thompson's (Santa Ana) ch. g. El Diablo, by Diablo—Elwood.
12. J. A. Lafferty's (Oakland) br. h. Advertiser, by Advertiser—by Steinway.

## SUMMARY.

Sir Albert S (J. Groom) .....	1	1	1
El Diablo (C. Farrar) .....	2	2	2
Margaretta (E. Lafferty) .....	3	3	4
Dictatress (J. H. Vance) .....	6	4	3
John A (W. Masten) .....	4	7	7
Doc Wilkes (H. D. Brown) .....	7	5	5
Gaff Topsail (J. Smith) .....	5	6	6
Queen R (F. E. Ward) .....	8	8	dis.

Time—2:10½, 2:12½, 2:09¾.

## RACE No. 55—PACING.

Special. Purse, \$400. Mile heats, three in five.

1. H. Brown's (Oakland) b. m. Miramonte, by Diablo.
2. E. B. Smith's (Reno) b. g. Deacon.
3. J. Donohue's (San Bernardino) b. h. Richard B, by Woolsey—by Ten Broeck.
4. J. D. Heines's (San Francisco) b. g. Penrose, by Falrose—by Brigadier.
5. Vendome Stock Farm (San José) ch. m. Our Boy's Sister, by Baywood—Wapsie.

## SUMMARY.

Richard B (D. Donohue) .....	3	1	1	1
Penrose (W. Masten) .....	2	2	2	r. o.
Our Boy's Sister (C. F. Bunch) .....	1	dis.		
Miramonte (H. D. Brown) .....	dis.			
Deacon (E. B. Smith) .....	dis.			

Time—2:16, 2:17¼, 2:18¾, 3:10.

## RACE No. 56—RUNNING.

For three-year-olds and over. Seven and one half furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Beaten non-winners at this meeting allowed 3 lbs. for each time beaten; and if not placed second or third, an additional allowance of 5 lbs. Winner to be sold for \$300.

1. Wm. Cahill's b. g. Rinaldo (6), by Leonatus—Dahlia; 110 lbs.
2. O. Appleby's ch. g. Ringmaster (a), by Buckmaster—Grisette; 114 lbs.
3. Owen Bros.' ch. f. Conejo (4), by Royal Flush—Lady Emma; 113 lbs.
4. J. Coffey's ch. g. Galanthus (4), by Imp. July—Snowdrop; 103 lbs.
5. B. F. Hobart's ch. g. Limber Jim (a), by Snuff-Box—Mildred; 116 lbs.
6. W. B. Jennings & Co.'s ch. g. Canderos (4), by Candlemas—Hinda Dwyer; 113 lbs.
7. P. Donalache's b. c. Wardman (3), by Tammany—Belinda; 104 lbs.

## SUMMARY.

Conejo (Foucon) .....	1
Rinaldo (Hoar) .....	2
Ringmaster (Burlingame) .....	3

Time—1:35½.



## RACE No. 57—RUNNING.

Sunny Slope Stake; for two-year-old fillies. Five furlongs. Entrance \$10, to accompany nomination; \$15 additional if not declared by 4 p. m. the day preceding the race; \$300 added by the Society, of which \$50 to second and \$25 to third. Weights 5 lbs. below the scale. A winner of a stake race in 1901, or a winner of three or more races of any value, other than selling races, 5 lbs. extra. Non-winners of two races allowed 4 lbs. Maidens allowed 7 lbs., and if such are the produce of a mare that has not produced a winner at the time of starting, 10 lbs. Maidens beaten three or more times since closing of the stake, allowed 5 lbs.; and if not placed second or third, 7 lbs. additional. Closed with 16 entries. Total value, \$520.

1. J. S. Campbell's ch. f. Innocencia (2), by Emperor of Norfolk—Espiritu Santa; 115 lbs.
2. A. J. Stemler's br. f. Divina (2), by Bassetlaw—Angelita; 115 lbs.
3. Burns & Waterhouse's b. f. Doreen (2), by Torsø—Decoy Duck; 110 lbs.
4. W. B. Jennings & Co.'s b. f. Sister Jeannie (2), by Imp. Midlothian—Fannie Louise; 115 lbs.

## SUMMARY.

Doreen (Ransch).....	1
Sister Jeannie (Logue).....	2
Divina (Ruiz).....	3

Time—1:00½.

## RACE No. 57A—RUNNING.

Handicap for two-year-olds. Five furlongs. Purse, \$225; of which \$40 to second and \$15 to third.

1. Stanfield & Ellis's b. f. Flo Culver (2), by Lew Weir—Juanita; 90 lbs.
2. W. B. Sink, Jr.'s b. c. Dawson (2), by Maxio—Easter; 90 lbs.
3. E. Lanagan's br. g. Hainault (2), by St. Carlo—Libbertifibbet; 110 lbs.
4. W. B. Jennings & Co.'s b. c. Lapidus (2), by Imp. Star Ruby—Pearl V; 106 lbs.
5. J. S. Campbell's b. f. Huachuca (2), by Emperor of Norfolk—La Plata; 116 lbs.
6. J. P. Atkins's b. g. Jarretiere d'Or (2), by Golden Garter—Ricardo; 116 lbs.

## SUMMARY.

Hainault (Hoar).....	1
Lapidus (Ransch).....	2
Jarretiere d'Or (Ruiz).....	3

Time—1:01.

## RACE No. 58—RUNNING.

The Governor's Stake; a handicap for three-year-olds and upward. One mile and a furlong. Entrance \$10, to accompany nomination; \$20 additional for horses not declared by 4 p. m. day preceding race; with \$400 added by the Society, of which \$70 to second and \$30 to third. A winner of a race other than a selling race, after the weights are published, to carry 5 lbs. extra. Closed with 19 entries. Total value, \$680.

1. W. B. Jennings & Co.'s b. h. Vesuvian (4), by St. Andrew—Hot Springs; 118 lbs.
2. Burns & Waterhouse's b. g. Scotch Plaid (6), by Imp. Midlothian—Mottle; 111 lbs.
3. G. Miller's br. h. Sir Hampton (4), by Imp. Watercress—Lizzie Hampton; 110 lbs.
4. Owen Bros.' b. f. Flush of Gold (3), by Royal Flush—Gold Cup; 113 lbs.
5. W. B. Jennings & Co.'s b. m. Andrisa (4), by Imp. St. Andrew—Fannie Louise; 108 lbs.

## SUMMARY.

Vesuvian (Ruiz).....	1
Scotch Plaid (Ransch).....	2
Sir Hampton (Logue).....	3

Time—1:53¼.

## RACE No. 59—RUNNING.

High-weight handicap. Six furlongs. Purse, \$250; of which \$40 to second and \$20 to third.

1. C. Young's ch. m. Good Hope (4), by Col. Clark—Gratitude; 114 lbs.
2. W. L. Stanfield's br. m. Kitty Kelly (4), by Apache—Playtoy; 105 lbs.

3. T. J. Field's b. g. Rey Dare (3), by El Rio Rey—Lady Dare; 108 lbs.
4. Wm. Cahill's b. g. Prestidigitator (4), by Russell—Active; 105 lbs.
5. P. Sheridan's b. g. Sir Dugald (3), by Imp. Dandy Denmont—Queen F; 115 lbs.
6. G. W. Snider & Co.'s ch. m. Vantine (4), by Imp. Anchorite—Vestina; 108 lbs.

## SUMMARY.

Rey Dare (Ransch).....	1
Sir Dugald (Foucon).....	2
Good Hope (Ruiz).....	3

Time—1:13¼.

## RACE No. 59A—RUNNING.

For three-year-olds and upward. Seven and one half furlongs. Selling. Purse, \$200; of which \$35 to second and \$15 to third. All to be sold for \$100.

1. Miss M. O'Connell's ch. g. Boardman (5), by St. Charles or Willful—Rosewood; 110 lbs.
2. T. Rector's ch. m. Mountain Dew (5), by Blazes—Alice B; 106 lbs.
3. P. Holly's br. g. Bob Palmer (3), by King Regent—Crescendo; 106 lbs.
4. J. D. Dunn's br. g. Pegalong (3), by Imp. Crighton—Sweet Peggy; 106 lbs.
5. Lone Stable's br. g. Casdale (5), by Favordale—Castalia; 112 lbs.
6. J. Webb's br. g. San Augustine (5), by Emperor of Norfolk—Hook Blonde; 115 lbs.
7. Thomas Latta's b. g. Pongo (6), by El Rio Rey—Ogalena; 110 lbs.
8. L. Tryon's b. m. Galene (4), by Imp. Brutus—Picnic; 108 lbs.
9. W. D. Hayes's b. g. Ravino (3), by Racine—Precious; 108 lbs.
10. D. F. Cox's ch. m. Castaine (5), by Eotheon—Pearlfinder; 110 lbs.

## SUMMARY.

Galene (Burlingame).....	1
Casdale (Ransch).....	2
Castaine (McNichols).....	3

Time—1:35¼.

## FRIDAY, SEPTEMBER 13, 1901.

## RACE No. 60—TROTTING.

Special. 2:14 class. Purse, \$400. Mile heats, three in five.

1. I. Mulholland's (Independence) b. h. Osito, by McKinney—Twilight.
2. F. Ward's (University) blk. h. McKenna, by McKinney—Etta Wilkes.
3. L. M. Clark's (Sacramento) b. h. Ouiboul, by Stamboul—Ouida.
4. S. A. Hooper's (Yountville) br. h. Alta Vela, by Electioneer—Lorita.
5. E. Lafferty's (San Francisco) br. h. Boydello, by Boydell—by Durango Chief.

## SUMMARY.

Osito (I. Mulholland).....	1	5	1	1
Alta Vela (S. A. Hooper).....	4	1	2	2
Ouiboul (L. M. Clark).....	2	2	5	r.o.
Boydello (E. Lafferty).....	3	3	3	r.o.
McKenna (F. Ward).....	5	4	4	r.o.

Time—2:16¾, 2:17, 2:18, 2:16.

## RACE No. 61—PACING.

Special. 2:12 class. Purse, \$400. Mile heats, three in five.

1. J. Heines's (San Francisco) br. h. John A., by Wayland W—Lady Moor.
2. Ed. Kavanaugh's (Vallejo) ch. h. Gaff Topsail, by Diablo—Belle.
3. G. Trank's (Chico) b. g. Harry J., by Reavis's Steinway—Jennie June.
4. A. L. Conkling's (Bakersfield) b. m. Edna R, by Sidney—by Director.
5. C. W. Mains's (Corona) b. m. Queen R, by Redondo—by Adrian Wilkes.

## SUMMARY.

Edna R (I. Mulholland).....	1	1	3	1
Gaff Topsail (I. Smith).....	2	2	1	2
Harry J (J. Wheeler).....	4	3	2	r.o.
Queen R (Millikens).....	3	5	4	r.o.
John A (W. Masten).....	5	4	5	r.o.

Time—2:16¾, 2:18¼, 2:17¼, 2:24¼.

## RACE No. 62—RUNNING.

For three-year-olds and upward, maidens and non-winners of a race in 1901. Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. Three-year-olds to carry 107 lbs.; four-year-olds and over, 110 lbs.; those beaten at this meeting allowed 5 lbs. Winner to be sold for \$200.

1. Murray & Collins's ch. g. Toribio (6), by Apache—Marion; 105 lbs.
2. M. Kane's b. g. Rio Colorado (4), by Rio Bravo—Commotion; 105 lbs.
3. W. D. Hayes's b. g. Ravino (3), by Racine—Precious; 102 lbs.
4. R. E. Dolan's ch. g. Howard (a), by Tyrant—Mayetta; 105 lbs.
5. C. W. Carroll's b. f. Chaste (3), by Jim Gore—Imp. British Blue Bell; 99 lbs.
6. Thomas Latta's b. g. Pongo (6), by El Rio Rey—Ogalena; 105 lbs.
7. J. Webb's br. g. San Augustine (5), by Emperor of Norfolk—The Hook Blind; 105 lbs.
8. M. Duffy's b. m. Phlegon (4), by Imp. Piccolo—Little Rose; 105 lbs.
9. T. Rector's br. g. Billy Moore (4), by Imp. Duncombe—Allanah; 110 lbs.

## SUMMARY.

Toribio (Hoar) .....	1
Phlegon (Ransch) .....	2
Howard (Burlingame) .....	3

Time—1:14½.

## RACE No. 63—RUNNING.

For two-year-olds, non-winners at this meeting. Five and one half furlongs. Selling. Purse, \$250; of which \$40 to second and \$15 to third. 7 lbs. below scale. Those beaten and not placed second or third, allowed 5 lbs. Winner to be sold for \$200.

1. J. Weber & Co.'s br. f. Torso Maid (2), by Torso—Happy Maiden; 108 lbs.
2. G. Summers & Co.'s ch. h. Tyrannus (2), by Imp. Star Ruby—Torsina; 111 lbs.
3. J. S. Campbell's b. c. Huachuca (2), by Emperor of Norfolk—La Plata; 106 lbs.
4. G. W. Snider & Co.'s b. f. Mariosa (2), by Imp. Mariner—Shannon Rose; 103 lbs.
5. P. Smith's ch. g. Fred Atterbury (2), by Bowling Green—Kittie Waddle; 106 lbs.
6. A. O. Manning's b. f. Irma A (2), by Rey El Santa Anita—La Vienta; 108 lbs.
7. L. A. Blasingame's b. c. Porous (2), by Wernberg—Chevy Chase; 106 lbs.

## SUMMARY.

Huachuca (Hoar) .....	1
Torso Maid (Ransch) .....	2
Fred Atterbury (Timmons) .....	3

Time—1:09.

## RACE No. 64—RUNNING.

For all ages; non-winners at this meeting. One mile. Purse, \$200; of which \$35 to second and \$15 to third. All to be sold for \$100.

1. D. F. Cox's ch. m. Castaine (5), by Eotheon—Pearlfinder; 109 lbs.
2. E. B. Smith's b. g. Sea Spray (a), by Imp. Mariner—Marinette; 107 lbs.
3. T. E. McLaughlin's ch. g. Mike Rice (a), by J. H. Fenton—Mrs. McAllister; 112 lbs.
4. J. Weber's b. m. Lizzella (a), by Morello—Lizzie Dunbar; 109 lbs.
5. J. S. Campbell's b. g. El Mido (5), by Sir Modred—Ethel; 107 lbs.
6. O. Appleby's ch. g. Ringmaster (a), by Buckmaster—Grisette; 112 lbs.

## SUMMARY.

Lizzella (Ransch) .....	1
Mike Rice (Tullet) .....	2
Ringmaster (Burlingame) .....	3

Time—1:42½.

## RACE No. 65—RUNNING.

For three-year-olds and over; non-winners of more than one race since June 15. Six furlongs. Selling. Purse, \$225; of which \$40 to second and \$15 to third. 5 lbs. below scale. Beaten non-winners since September 1 allowed 5 lbs. All to be sold for \$200.

1. P. Crowley's b. h. Gusto (4), by Imp. Brutus—Irish Lass; 112 lbs.
2. Walter Maben's b. m. Miss Vera (4), by Amigo 8—Fame; 114 lbs.
3. J. D. Dunn's br. g. Pegalong (3), by Imp. Crighton—Sweet Peggy; 106 lbs.

4. C. Young's ch. f. Eonic (3), by Eon—Mermaid; 108 lbs.
5. D. Morgan's b. g. McFarlane (6), by Imp. Mariner—Moonlight; 117 lbs.
6. Burns & Waterhouse's ch. g. Rollick (3), by Take Notice—Happy Maiden; 111 lbs.

## SUMMARY.

Eonic (Hoar).....	1
Rollick (Ransch).....	2
Gusto (Logue).....	3

Time—1:13½.

## RACE NO. 65A—RUNNING.

Five furlongs. Selling. Purse, \$200; of which \$35 to second and \$15 to third.  
Special weights. All to be sold for \$100.

1. F. Allen's b. m. Blue Bell (a), by Prince of Norfolk—Gem of the Mountains; 107 lbs.
2. G. L. Richardson's blk. m. Pidalia (4), by Idalium—Piquant; 107 lbs.
3. J. Whalen's b. m. Swiftwater (4), by Imp. Candlemas—Repleta; 107 lbs.
4. H. L. Haskell's ch. g. Gold Baron (5), by Imp. Rayon d'Or—Ballerina; 107 lbs.
5. L. Tryon's b. m. Galene (4), by Imp. Brutus—Picnic; 112 lbs.
6. E. Carey's b. f. Catherine Bravo (3), by Rio Bravo—Catherine B; 110 lbs.
7. Wm. Cahill's br. c. Lief Prince (3), by Prince Lief or Bermuda—Natalie; 100 lbs.
8. P. E. Smith's ch. m. Nettie Clark (4), by Rio Bravo—Apollinaris; 107 lbs.

## SUMMARY.

Gold Baron (Howson).....	1
Catherine Bravo (Logue).....	2
Galene (Tullett).....	3

Time—1:01½.

## THE IMPORTANCE OF SELECTION IN BREEDING ANIMALS.

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By LEROY ANDERSON,  
Instructor in Dairy Husbandry, University of California.

Presented at the Annual Meeting of the Jersey Breeders' Association of Southern California  
at Riverside, March 15, 1902.

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As a text for the subject under consideration, I want to take a few words of Professor W. H. Brewer, of Yale University, who is one of the wisest and most thoughtful students in the country upon the principles of breeding animals. The words constitute one of the laws that he laid down some years since as governing the best practice in breeding, and are as follows: "Vastly more animals are born than are needed for breeding, and only those possessing the highest aggregate of good points should be used to breed from." This principle he termed "Selection." If we analyze the word and study it in its fullest sense, we find it to be very comprehensive; and not only the corner-stone of the breeder's practice, but the entire foundation upon which he is to build the framework and the complete furnishing of a good herd of animals. Selection includes in its scope those primary laws of heredity and variation which Professor Brewer also defines—the former in the sense that all animals resemble their parents and ancestors in most characteristics; and the latter, that no two animals are alike in all characteristics, and hence the offspring are never exactly like their parents. I say that selection includes these, because in practice we retain those animals for breeding purposes which possess in the greatest degree the good qualities of parents and ancestors, or we retain those that show any decided variation for the better over their parents.

The theory and practice of selection also bring into play a careful observation to find out the animals in our herds which show the most adaptability to their environment as to soil and climate; which show the greatest improvement under increased feeding; which show themselves best adapted to their special purpose, whether that be to produce meat or milk; and which are most prepotent in giving their own good qualities to their offspring.

Darwin, in his notable work on *Animals and Plants under Domestication*, defines three kinds of selection, viz.:

1. Methodical, or that kind of selection which a breeder uses when he has in mind an ideal animal, and mates his animals with the purpose to produce one approaching as nearly as possible to that ideal.

2. Unconscious, or that kind of selection which a breeder uses when he mates the best animals of both sexes without making any study of

their peculiar individual characteristics and without having in his mind any fixed ideal toward which he is working.

3. Natural, or that kind of selection which we find in practice among animals in their wild or native state where the mind of man is 'not a controlling factor.

As members of the Jersey Breeders' Association of Southern California and men who are breeding thoroughbred cattle, I presume each of you may be counted among those who are practicing methodical selection. That is, each of you carries in your mind a picture of the Jersey cow which is your ideal of what the perfect cow should be, and you mate your animals with the idea of producing living specimens of that mental picture. Such practice is the kind that results in the most rapid improvement and has worked such wonders in the development of all improved breeds of livestock, and has, moreover, given the world the families which are noted for so great powers of production. In this noble and worthy field of progress, I am sure the Jersey Breeders of Southern California are active workers.

The possibility, and the power as well, of selection depend upon the fact that all organic beings are variable. It is a common observation, known to even the most casual observer, that all animals vary in their several characteristics; that the offspring are never exactly like their parents. The heifer when it comes to maturity may be almost the perfect image of its dam, but you who study both carefully can see differences in form. And if the form be very similar, the chances are that there will be differences elsewhere, possibly in the milking qualities. Variability is sure to result in all breeding. Why this is so is not so easily demonstrated as the fact that it is so. The principle which we call heredity is strong and subtle in its workings. We may see to-day the effects of an inheritance of many generations, or even a century ago, and because we behold some features in an animal which we can not see in the living ancestors we are apt to call it an unaccountable variation, while in reality what we see is genuine heredity, only we can not perceive the line of transmission.

There are many causes, any one of which may lead to a variation from the parent stock. Chief among these causes is the influence of food, either scarcity or abundance. In the upbuilding of all our improved breeds of stock no one factor has exerted a stronger influence than food. By an abundance of the best kinds, some members of each generation have been made a little better than the animals in the previous generation. The dairy cow has been made to produce a little more milk and butter than her dam; the beef animal has been induced to lay on his fat a little more evenly and more in the valued parts; the lines of the hog have been made slightly more even; the sheep has put on a little finer wool, or a better quality of mutton; the hen has been made a little rounder and plumper or made capable of laying a few more eggs. All these are variations that improved feeding have made possible, and being accelerated from generation to generation by wise selection there results a final grand improvement.

The care of the animals, aside from food, is another potent factor in variation. Climatic conditions are of great importance in this particular, and should be studied with care by all who wish to improve their livestock. Subjection to unusual cold or to cold storms causes a migration of food material in the animal's body from the work of build-

ing tissue or of secretion, to the work of keeping the body warm. This causes a check in the development of meat or milk, as the case may be, and the seriousness of the check, or the certainty of the animal's overcoming its effects, depends upon the length of time during which the change in the use of food nutrients continues. If it be for a brief time only, the result is not likely to be serious. If the period be a long one, the chances are that, in the case of a milch cow, the former flow of milk will not be recovered during the present lactation period. There is then a loss of food; as well as a forced change in animal function. Lumber is always considered cheaper than food to protect animals from undue exposure. Moreover, the variation which is caused in the animal by lack of care is always a detrimental one, and one that we do not wish to propagate.

Another cause of variability is the practice of crossing breeds; that is, mating two thoroughbred animals of different breeds. This practice is one that appeals very strongly to those whom we may call the laymen among breeders. They are not strictly breeders, because they are in the stock business solely for the product of the animals and not for the purpose of building-up a herd of thoroughbred stock. They look over the different breeds, and do not see one that singly combines all the qualities which they desire their herd to possess, whereat they conclude to cross two breeds, the union of which ought, from their point of view, to result in just the real thing. There is both advantage and disadvantage in this practice. The main advantage is that crossing usually results in a stronger constitution. The disadvantage is that it likewise causes an undue amount of variation. Two breeds that have been reared along special lines for many generations, and whose characteristics have become fixed in different directions, are mated. There is a clash of characters, as it were, and the resultant offspring may possess the parents' virtues in equal degree, but it is more likely to possess the characteristics of the stronger parent to the largest extent, or to revert to several generations back for its inherited qualities where the characteristics were poorer than is now possessed by the immediate parents.

A familiar example of crossing is mating the Jersey and Holstein, the owner reasoning thereby to secure the large milk flow of the latter and the high quality of the former. Why is he not as likely to secure the small yield of the Jersey and the low quality of the Holstein? At the best he is fortunate if he secures an animal which is a fair average between the two breeds. The instances where this kind of crossing has been practiced are not measured by a large proportion of successes. Experience has shown that breeding to the thoroughbred idea is the right road to success. Crossing may cause a good variation, but once caused there is little opportunity to take advantage of it, because it can not easily be perpetuated. If we breed the animal possessing the desired variation to another cross-bred we are quite as likely to cause retrogression as to make improvement. This practice is one of the means of forming new breeds; but building new breeds is an art requiring the highest degree of skill and intelligence. And why try to form new breeds when there are enough old ones to fit any possible condition or set of conditions? If we breed to a thoroughbred of either of the two breeds we are returning to the thoroughbred idea, where we might better

have remained at the beginning and seek our improvement through a less radical variation.

I take it that the breeders of thoroughbred stock are seeking to-day to cause variability in order that there may be some opportunity for the practice of selection. Were there no variability all animals would be alike, and there would be no selection; neither would there be any improvement. Even though the breeds of farm animals have reached a high stage of improvement, no one believes that the opportunities for improvement are passed. There is a higher authentic record for butter production to be made than is now on the books, and what is still more important and far-reaching in its effects, the average production of even registered cows is capable of being increased to a very large degree. The kind of variation that breeders are attempting to cause is not of the radical sort, not of the kind that marks a decided difference between individuals. Variations of this sort are difficult to perpetuate, even though they may be in the right direction. The variation that is attempted is the gradual change, a slight improvement from generation to generation, caused by improved food conditions, better care, and judicious mating of animals which show tendencies to vary in the right directions. The gradual change is easier to perpetuate than the marked variation which makes an animal stand out from the members of its own breed almost as much as it would from the individuals of another breed.

The ability to detect the gradual changes in animals is a prime requisite of the skillful breeder; for the importance of selection lies in the power of the breeder to select these scarcely appreciable differences in the animals which he is handling. Such differences are capable of transmission, and if they can be accumulated after a few generations the result may then be seen by every one. You who are with your cattle every day can point out defects in certain particulars or good indications in other directions which I could not see before your suggestions were made. It requires constant study and a faculty for close discrimination, which unfortunately few persons possess, to be able to see the minute variations that should be seen in order to give to selection its greatest value in breeding animals. Having discovered the differences, however small, if the breeder take advantage of them he can work wonders in the development and improvement of his herd. As a breed grows older and the various families or strains have been bred along similar lines, the individuals become more and more uniform in characteristics, and the difficulties attending wise selection increase. Improvement, therefore, becomes more gradual, and the breeder who desires to do his share in the upbuilding of his favorite breed must be alert and be acquainted with his individual animals.

The effects of selection are seen in the general development of the whole animal, but more particularly are they shown by a development of such parts of the animal as are most highly prized as a source of beauty, food, or revenue. The hair of the Angora goat is made finer during succeeding generations, because that is the part of the animal which is most valued. The wool of the Merino and the mutton of the Shropshire have been greatly improved in quantity and quality, because these were considered of highest value. The loin and thigh of the beef animal have been increased in size, because the breeders have sought meat rather than milk production and they have striven to put the



flesh upon such portions of the animal as will bring the largest financial return. The dairy cows have been induced to give ever increasing amounts of milk, oftentimes to the injury of good form. And all these things have been done by man selecting the animals for breeding purposes which showed the strongest tendency to form the product which he considered most valuable. He led his cattle to produce milk or meat according as his conditions determined whether he could receive larger returns from dairy or beef products.

It is not to be supposed that the Shorthorn was developed as a beef animal and the Holstein-Friesian as a dairy animal because there was no other alternative in either case. Possibly natural food conditions were such as to foster the development of the two breeds as we find them to-day. Nevertheless, if the men who are responsible for the breeds had selected for breeding the Shorthorns that showed the greatest tendencies toward milk production and the Holstein-Friesians that showed the strongest tendencies toward flesh production, the tables would have been reversed, and we would to-day be classing the Shorthorn among the special dairy breeds and the Holstein-Friesian among the beef breeds. The facts are that the English people were demanding a better quality of meats, and the originators of the Shorthorn set about to supply the demand by breeding their cattle accordingly. In Holland, market conditions were such as to make butter and cheese more profitable than beef alone, and so the Dutch farmer selected his best milking cows to breed from. Along similar lines selection has shown its results in all kinds of animals.

The breeder may know ever so thoroughly the possibility, the importance, and the effects of selection, but in the practice of selection—"there's the rub." It is one thing to know what ought to be seen and done. It is quite a different thing to see and to do. The breeder may be skillful in discrimination of slight variations, but some day he is obliged, in order to prevent inbreeding, to depend upon a brother breeder to select a sire to head his herd. This sire may not prove to be a good selection, but the circumstances are such that he must be used, with the result that many of the valued points toward which the breeder had been working for years are lost in a generation. The moral would seem to be that each breeder should make personal selection of all his stock. This, however, is impossible in most instances. Another man's ideas of excellence and judgment must be depended upon, when, if anything goes wrong, there remains the satisfaction of laying the blame on the other fellow.

It may be some consolation to believe that a larger stress needs to be laid upon selection, so far as the eye is concerned, in meat-producing than in dairy stock. Outward form may be some indication of milk qualities, but the real and accurate judgment must always be based upon the yield of milk and butter. Dairy qualities and power for production should have first place over any fancy points of color or form. Happy is the man who can combine in his animals both beauty of form and profitableness of production. But form, other than that which is necessary to indicate strength of constitution and capacity for production, should usually be sacrificed, if necessary for production itself.

The chief criterion for judgment in selecting his animals being actual production, the breeder of dairy stock has his work simplified by the use of modern and convenient methods for finding what his cows are

doing. The Babcock test is much easier than the churn and equally accurate in determining a cow's production of butter-fat. We need not consider butter. It is not produced by the cow, but is made by man. And I hold that a breeder of thoroughbred dairy stock who does not systematically test his cows so as to know at least the approximate yield of each one is not living up to his opportunities and is not worthy of patronage by those who are seeking animals for breeding purposes. In the first place, he does not know which are his best cows, nor which are showing the greatest variation or improvement over their dams. Second, if he knew what each cow were doing he could sell some of his stock for twice the money he now receives, because of the authentic records behind them. Moreover, he might send some of the bulls, which he is now selling for breeding purposes, to the butcher, and thereby improve the breed.

This thought calls to mind again our text, viz.: that vastly more animals are born than are needed for breeding purposes. It is unfortunate for the sake of a more rapid improvement of all breeds that this is not as true in practice as it is in theory. The fact is, that there is a demand for very nearly all the thoroughbred dairy stock that is born, and that for breeding purposes. Breeders, then, can not be blamed for selling a bull calf for as much money as the same animal would bring for beef at the age of two or three years. But so long as this continues we can not look for as rapid improvement, even among thoroughbred stock, as we could if a more rigid selection were followed, even to the killing for veal of one half of all calves that are born. Because a calf is eligible to have its name recorded in a herd book is no sign in itself that it is worthy of an opportunity to perpetuate its kind. Such opportunity should be given only upon the basis of actual production by its immediate ancestors. And one reason, at least, why so much fault is found with thoroughbred stock on certain occasions is because a careful selection is not made, and because of the opinion too often prevailing that an animal must be good because it is a thoroughbred. The time will probably never come when there are not some poor individuals in any or all breeds, but they will grow less only in proportion as there is a rigid use of the knife upon all inferior animals.

If the cattle club or registry association does not provide a roll of honor wherein may be entered the names of all animals which have proven themselves capable of high production, then let the breeder establish a roll of honor for his own herd, and let him follow closely its figures when mating his animals. Let him combine the teachings of its pages with what his eye tells him of individual merit as to form and quality, and his matings will be of such a high order as to give him ample reward for all his trouble. In selecting breeding animals, then, there must be considered individuality, the breeder's idea of the standard of excellence, and above all the pedigree that is supported by a high, uniform production.

I would consider myself as losing an opportunity did I not add a word of encouragement, though you may not need it, to you who are working for the upbuilding of one of the greatest wealth-producing breeds of cattle that the world has known. That you are daily in contact with nature and nature's forces is in itself a cause for congratulation. But there is still greater cause when we consider that you are using these forces to mould new types and to improve upon old ones.

The forces with which you are working are plastic and mobile, ready to respond to the slightest touch or change in environment which your mind may dictate and which your study may tell you is wise. The world needs more Burbanks—men who study nature carefully and live with her to find out her ways of working. Although the Burbank whom California is proud to call her own, works in the field of plants, there is opportunity for the same spirit and the same attention in the animal field. Results may come more slowly, but if followed diligently they are bound to fruit. Moreover, the fact of having an ideal and striving to attain it, is a virtue in itself and makes a man among men. There is reason for thanksgiving that we have the field of nature in which to work, and I congratulate you that you are so well advanced therein.

## THE NECESSITY OF USING PURE-BRED SIRES IN FLOCKS AND HERDS.

BY S. B. WRIGHT, OF SANTA ROSA.

"None but the rich can afford to raise scrubs."

If there were in this country any way of arriving at conclusions, approximately correct, as to the breeding of given animals without the aid of record associations, a stickler for pedigree in connection with form or performance might stand upon uncertain ground.

But as "the best are none too good" where such energy, money, and time are involved as the breeding of stock demands, the importance of being able to trace correctly, for many generations, the breeding of all animals intended for use in "grading up" on common stock or for sires or dams as foundation stock in pure-bred flocks or herds would seem beyond question.

That "like begets like" is accepted as true in this connection; but with only part of the blood pure or of the desired strain, "like" has two factors, and the undesirable one is apt to "crop out" in the progeny with provoking frequency. A breeder is always puzzled to know how to eliminate in the offspring the objectionable points of their ancestors, and to perpetuate the desirable characteristics. There is only one certain and economical way of "grading up" on common stock, and that is by using nothing but pure-bred sires. This may seem expensive when compared with the practice of buying cheap bulls or boars or rams, or hiring the service of cheap stallions; but when one becomes educated to the better prices and realizes how shamefully extravagant and wasteful of funds and time it will prove to breed from poor sires, worthy animals will command good prices.

A few years ago, when really first-class bulls were cheaper than at present, one of my neighbors went East, expecting to bring home about the best serviceable bull to be found of a certain breed. His ideas, as he told me, were about \$300. To his surprise he soon found that yearlings commanded that much. It seemed unreasonable to pay that price, add the freight, and then ship the bull to California. He would be laughed at. But everybody asked prices about the same, and sold stock, too. This neighbor began to think, and finally concluded that perhaps he did not appreciate a good thing anyway, and then paid the price asked for a very fine animal, securing one of the best individuals of that breed that has ever come to California, and an animal that has made him more money than any other.

There are conditions prevailing, however, where it is impossible to get anything but grades or "cross-bred" sires. At best, results from this plan of breeding are disappointing. Of course, this is better than

no effort at improvement; but there is no good reason, theoretically or practically, for assuming that undesirable characteristics of dams or sires so bred will not be transmitted to their descendants with quite as much certainty as their desirable features. Under such a system of breeding it is not possible to determine from year to year whether any improvement is being made.

Until recently it was deemed impracticable or impossible to make prime beef out of range-bred cattle before the animals were three to four years old. Now, range-bred cattle only one year old are fed in Eastern lots and often top the markets on price before they are two years old, and weigh from 1350 to 1600 pounds gross. But such cattle are well bred, even though grown on the ranges. The "Breeder's Gazette" (Chicago) of January 29, 1902, contains an article so applicable in this direction that I can not refrain from presenting part of it. It says: "We may therefore be pardoned the presentation of the accompanying brief statement from Mr. Richard Walsh, general manager of the Adair Ranch, on which the *champion carload of steers at the recent international* [show] was bred: 'In carrying off the championship, the Texas steers have done what you warned the States' farmers would happen—namely, that they would not pay the price for good bulls, and that some day they would awaken to the fact that the best bulls were on the ranges and that steers would come off of these ranges quite fit to compete with the best of the natives.'" This is an age of baby meat, and by the use of bulls in herds that were bred under the eyes of men whose lives were devoted to the production of cattle yielding the greatest gain on food consumed, range-feeders are being produced to meet the requirements of the feed lot as well as of the butcher. Without the use of pure-bred sires it would have been impossible to effect such results within a reasonable period.

By way of showing the perfection attained by pure-bred animals, the Hereford steer, Alamo Champion, bred by Mr. John Sparks, of Reno, Nevada, is one to the point, although rather an extra specimen. He weighed 1900 pounds, was sold for 10½ cents per pound (gross), and dressed 70⅓ per cent, the heaviest dressing of any steer ever killed at the Armour Packing Company's yards, Kansas City. After giving due credit to the conditioner of this steer, the fact remains that he was a triumph of the breeder's art and a monument to the credit of pure-bred stock. If *one* steer can be made to lose only 29⅓ per cent in dressing, *many* may be made to do as well by patient breeding and proper handling. It should be gratifying to all that Holstein cows have shown tests of more than 20 pounds per week of butter-fat in recent trials, and that some of these cows yield from 420 to 525 pounds of butter per annum, and with their milk testing a low percentage of butter-fat. The mere presence of a large percentage of butter-fat in milk is not evidence that the cow yielding it is profitable. There are other cattle that might be given tests with surprising results, and a thorough educating of our people along this line would doubtless result in a vast increase of the visible supply of beef cattle on this coast. Some of the best families as beef cattle among the Shorthorns have individuals of rare merit as milk and butter producers.

Possibly it is not generally known that the Scotch-bred Shorthorn cow, Missie 163d, for which Messrs. W. C. Edwards & Co., of Canada, paid

\$6,000 at Chicago recently, belongs to a family in which there are many noted milkers.

In sheep, the feeding of lambs has become a great industry. Although market conditions proved a bit unsatisfactory for this business in 1901, the fact remains that meat can be put on lambs at less expense than upon grown sheep, and that in order to raise good feeding lambs, their sires or dams must be of some good mutton type. As long as sheep are held in large flocks and herded on the ranges, Merino ewes will be retained; and where feeders are to be produced, rams from some of the mutton breeds will be used. Think of lambs weighing 90 pounds at ninety days old! Eastern breeders of mutton sheep claim to produce them, and possibly do accomplish that result; but 65 to 70 pounds in ninety days can surely be made with good lambs. Our small farmers patronize the breeders of pure-bred mutton sheep too little and the butcher shops too much. My own preference is for the mutton sheep that will drop lambs at any season of the year desired—not many will do this; but there are such breeds. Every good farm of 100 acres could carry forty or fifty well-bred mutton sheep. Many of these could be *pure-bred* and registered. A large percentage of the meat used at home should be from the home flock, and by the sale of choice individuals for breeders, money could be provided with which to buy other meat. Mutton types do not bunch and travel like the Merinos do. They will stand in one place and feed until *full*, and then lie down like a well-bred beef steer.

Five-hundred-pound hogs at one year old. "How do you make them?" asked a friend. It is useless to feed for this result, unless it be the right hog. However, the best ones do make that weight at twelve months old, and occasionally one does better. But the most agreeable feature about handling such hogs is their readiness for market at a young age, and the juicy, white, tender meat of these animals weighing 200 pounds at seven months old. Contrary to the ideas generally accepted, the most rapid growth in young hogs is attained, and the best meat produced, while the youngsters are allowed plenty of exercise and an abundance of green feed, or its equivalent, in connection with a grain ration. An exception to this plan of exercise is conceivable when the chief ration for pigs is sour milk. However, sweet milk, with a small percentage of ground grain added, is far superior to sour milk as a ration for young hogs.

Some good results are reported from tests in feeding pure-bred hogs. W. E. Spicer reports as follows on the registered sow No. 7: She had been exhibited at the fall fairs in 1888, and was therefore in good condition. She was weighed at 4 o'clock P. M., having eaten at noon all the shelled corn she wanted. After that, during the period of test, seven days, she was fed three times daily on corn meal soaked from one feed to the next, generally using dish water. She had during the week two or three feeds of pumpkins. At the end of the period she was weighed, and found to have gained 46 pounds in the seven days. Although the meal was not weighed at the beginning of the test, the barrel out of which she had been fed was again filled with meal, and, as the feeder believed, just about as it had been when the test commenced, and that meal was found to weigh 90 pounds. In other words, this sow had increased her weight from 632 pounds to 678 pounds, a gain of 46 pounds in seven days, having consumed about 90 pounds of corn meal

soaked in dish water, with the addition of a few feeds of pumpkins. In the fall of 1890 Mr. Spicer fed the registered sow Romford 2d (15790), with a view of learning how many pounds of corn meal would make a pound of pork. In a seven-day test this sow increased her weight from 491 pounds to 525 pounds, thus gaining 34 pounds and consuming 97 pounds of corn meal, no other feed being given. Another sow increased her weight in thirty days from 485 pounds to 611 pounds, a gain of 126 pounds, or  $4\frac{1}{3}$  pounds per day, consuming 515 pounds of a mixed grain ration and 20 pounds of milk, that is, 2 pounds of milk per day during the last ten days of the test.

Mr. Reuben Gentry, manager swine department for Biltmore Farms, North Carolina, states that the registered boar Columbia's Duke (33855) gained over 4 pounds daily for a period of forty days.

It is not at all unusual, where young hogs can get sweet milk, to find representatives of the best breeds weighing 250 pounds at seven months old. In order to carry such weight at this age the animals must have strong bones, stand on straight legs, and have great muscular power. With me, where but little milk can be had for hogs, 90 pounds at ninety days old is considered an excellent weight for pigs. Beyond that age pigs gain faster.

On August 6, 1901, a registered boar 198 days old (6 months 18 days) weighed in medium condition 247 pounds, and the same pig weighed 190 pounds when 159 days old (5 months 9 days). Star Baron, one of my prize yearling boars in 1901, weighed 250 pounds when 221 days old, 300 pounds when 247 days old, and 350 pounds when 276 days old (9 months 6 days). This same boar weighed just about 600 pounds when  $13\frac{1}{2}$  months old. Three other young boars when 9 months and 9 days old weighed 332, 335, and 340 pounds respectively. And one of the latter reached the very unusual weight of 750 pounds at the age of  $16\frac{1}{2}$  months. None of these hogs were ever confined in close pens, nor did they always have access to sufficient green feed or its equivalent. However, they did have something of the kind during the greater part of the time. In fact, a young hog can not make proper growth if deprived of green feed or its equivalent for any considerable length of time. Any of the large breeds of swine can doubtless furnish individuals capable of making as rapid growth as did those mentioned. However, the hogs responding most rapidly in gain to feed consumed will be those whose ancestors were selected and bred with a view to rapid and economical growth; and it is impossible to follow intelligently through a long line of ancestors, unless indisputable evidence be on record as to the breeding of the individuals.

Even at the risk of being criticized for unpardonable digression, I feel that our State Agricultural College should be mentioned and an appeal be made to our farmers and stock-raisers to unite in a demand for large appropriations for its use. The department of animal husbandry of this institution is getting little attention in proportion to its needs, and yet our farmers and breeders of livestock, the men who pay the bulk of our taxes and contribute most extensively to our wealth, will derive the greatest benefit through the agricultural department of our University, and especially through that branch of it which deals with animal husbandry. Not less than \$250,000 should be appropriated at once and be made immediately available for this department of our agricultural college. The farmers and stock-raisers should demand this appropria-

tion from our next Legislature. This is a great State. She has vast resources, but does not produce her own meat. She is capable of doing so, and our people have a right to some education on such points. There is a dairy school in connection with the college; but, so far, "*no cows*." I am interested in lands upon which several hundred dairy cows are annually grazed; but whenever our tenants undertake to run dairies and pay rent without keeping or owning any cows I shall insist upon knowing all about the *new secret* of paying rent. The dairy department of our State Agricultural College should not only have cows of different breeds and of the best individuals, but there should be land upon which to keep them. The best representatives of the beef breeds should be kept, and so with every kind of animal that is likely to contribute largely toward the wealth of the husbandman. The College of Agriculture should be fully equipped and well maintained, and the department of animal husbandry is entitled to large appropriations of money. If the interests of farmers and breeders of stock are to be neglected on educational lines in order that other branches of our University shall thrive, it is time for the taxpayers to demand just recognition.



## THE GROWING OF SWINE.

By C. H. SESSIONS, OF LOS ANGELES.

There is no animal raised on the farm that will grow into money as quickly and with more profit than the hog, and it is a branch of farming that is very much neglected.

In growing swine it is necessary to raise only those strains that will return the greatest amount of flesh, in the shortest time, with a given amount of feed.

In former years, and in fact at the present day, there can be found on many ranches in California, numbers of the native Spanish hogs, or "razorbacks." They are a very hardy hog, but are not proof against the diseases of the more fashionably-bred swine of to-day. They can take care of themselves and live in the swamps and river-bottoms, but it requires two or three years for them to mature, ready to put on fat. Many farmers have dropped this breed and taken up the improved breeds of Berkshire and Poland-China; but there are too many of them left, and it appears that very little attention is paid to getting rid of them. When growing, they will take double the food given a well-bred hog, and require two or three times as long to get ready for market, and therefore it costs about four times as much to raise them.

Through careful selections and judicious breeding, the Berkshires and Poland-Chinas are able to make rapid growth and attain a marketable size in from eight to twelve months. Many of the pigs weigh two hundred pounds at six months of age, but it requires good handling to get such results.

The difference between the two breeds named is not so great as in former years, but they both make good use of their food and put on flesh rapidly. The Berkshires carry a larger percentage of lean meat than the Poland-Chinas, and as the market generally demands this meat, it makes them a very desirable hog. Since cotton-seed oil is being used in place of lard, there is not so much demand for the lard hog.

Many large growers of swine prefer to cross these two breeds, thinking they have a hardier and better feeding hog than in the full bloods.

It used to be claimed that for large ranges the Berkshires were not a success, as they would soon become wild and hard to manage, while the Poland-Chinas were more quiet; but I believe the present strains of Berkshires have been bred on more quiet lines and are not so liable to grow wild and cross.

In taking up the raising of hogs, the first thing, and the most important, is to get good foundation stock. If it requires too much money to buy all thoroughbreds, be sure to get a thoroughbred male with a pedigree, and have him recorded and know he is from good strains.

For sows, take the best you can afford to buy, and cross with the thoroughbred male. I have bred the worst specimens of "razorback" sows I could find, with a thoroughbred Berkshire boar, and have been surprised to see the improvement of the first litters; then cross these young sows with another Berkshire boar, and this second cross produced pigs having all the characteristics of the thoroughbreds. The first cross showed a great shortening of the snout, and the second was as short as necessary. It may be timely to say here, that it is generally believed that short-nosed hogs make better feeders than the old style long-noses, and in selecting sows this should be kept in mind.

A grade male will make no improvement in a herd, and should never be used, as he is liable to breed back to some inferior strain.

Good animals can be had at \$25 and upward, and in a short time they will pay for themselves in the improved size and quality of the pigs, which make them profitable feeders.

In selecting breeding animals it pays to visit the State Fair, where there are on exhibition the finest in the State. The visitor is there permitted to see the best of several herds, and he can then compare the different specimens and select the type which he has in mind. If not convenient to visit the State Fair, visit as many herds as possible, and see how they look at home, and selections can be made which would be more satisfactory than to order by letter, leaving the selection with the breeder.

The greater part of the thoroughbred business is done through correspondence, and generally satisfaction is given, as no breeder expecting to remain in the business can afford to take any advantage of the buyer.

I would not recommend breeding animals under eight months of age, nor would I advise waiting until over a year old, as I have had poor success in getting sows with pig after that time. I have bred most of my stock at about eight months, and they have generally made good breeders and good, large-sized animals. If bred too young, they are liable to be stunted and will always be small.

Great care should be used in handling breeding stock. Do not allow them to get too fat, or the litters will be small and weakly. If possible give them a good range, and they will hunt out the grass, roots and all.

Some object to allowing the hogs a pond-hole for a wallow, on account of danger of disease, but I do not think such fears are well founded. They certainly enjoy a bath in the thick mud, and it makes them far more comfortable in a hot day; and in rolling, the hogs get covered with the mud, which kills lice (if they have them). These water-holes can be disinfected with crude carbolic acid or preparations made for the purpose.

If the hogs are kept confined, the pens should be disinfected often and kept clean. A coat of whitewash twice a year is good.

In case of sickness in the herd, remove the healthy ones to fresh pens, leaving the sick ones in the infected pens, and then begin a course of scraping and cleaning out, washing everything with disinfectants.

Give as much green food as possible, and in case of sickness they will be more likely to recover than if fed on an entire grain ration. There is no food better than skimmed milk and a little corn meal or ground wheat. The latter makes an excellent food for young pigs, and if it can be had at a fair price I think it is better than barley for the older ones. Pasture is always good if it can be had, but, if not, fresh-cut alfalfa should be given daily.

## POULTRY CULTURE AND ITS ADVANTAGES IN CALIFORNIA.

BY HENRY BERRAR, OF SAN JOSE.

Of all the industrial arts, poultry culture offers the greatest inducements and the best opportunities for investment; yet it is a fact that this industry is constantly overlooked by the average individual. The officers and members of the State Agricultural Society recognize the importance of this industry and are using their best endeavors to educate the people and instruct them in this branch of economics. Many of the Eastern States which lack the natural facilities and advantages of California have long since recognized its many important phases, and lend encouragement and support by liberal appropriations for its promotion and by the assistance of those who are willing and anxious to avail themselves of the advantage of experiments conducted scientifically. Systematic reports of progress made, and statistics, are printed; bulletins and pamphlets are distributed to their poultrymen free of charge. The result is that what was formerly the most unimportant adjunct of the farm is now the best-paying element of agricultural investment. In addition to the home product, we are the recipients of hundreds of carloads of poultry products, and there is never a time when eggs and fowls do not command a good market, thus demonstrating that an independent living would be assured to thousands of families who should enter this business to supply our local markets.

There is no fear of this industry being overdone, as there is an unlimited home market for poultry products, and there always will be an unlimited demand for these products in our island possessions and in the Orient.

The United States imported millions of eggs in addition to the estimated \$140,000,000 worth marketed last year. The demand increases faster than the supply, and this industry represents to-day, in annual output and stock on hand, the enormous sum of \$700,000,000, and is second on the list of industrial economics.

The figures of the Department of Agriculture show approximately, last year, two hundred and eighty-five million (285,000,000) chickens in the United States, and ten billion and one million (10,001,000,000) eggs, or about 655,000 tons, exclusive of all eggs used or consumed before reaching market.

The output of eggs last year was greater than the postal revenues, and large enough to have paid the entire expenses of the War Department.

To encourage the investment of private capital, this State should assist its poultrymen and the public in general in mastering every

detail of this business. The lack of interest of the average citizen is only exceeded by the inertia of the State. Breeders and keepers of fowls are uninformed as to the fundamental facts and established principles, which are no longer subjects of experimentation. No State in the Union has greater natural resources, finer climatic conditions, or a better market. Instead of importing poultry products, we should have thousands of poultry farms throughout the State and be exporters. There is no other industry in California which offers a more independent and a more enjoyable way of earning a livelihood; no other department of farming will yield larger returns.

While a flock of fowls is a most valuable adjunct to the farm and orchard, it does not necessarily follow that a successful poultryman must be a farmer. Indeed, many of our most successful poultrymen are "city men," who know nothing about farm work—men who, by close application, study, and work, have mastered the science and art of incubation, brooding, and egg production, and by studying the experiences of others in good "poultry journals" have attained great success in producing first-class stock in every way.

#### COMBINED FRUIT AND POULTRY CULTURE.

Our orchardists are gradually awakening to the importance of combined fruit and poultry culture. In addition to the valuable service rendered in ridding the orchard of insects, the fowls are a never-failing source of revenue. Poultry distributed throughout an orchard on the colony plan thrive well and yield a large income in proportion to the expense.

At times when the sales of fruit are slow and the returns are disappointing, the busy hen offers relief and assistance by furnishing a product which always commands "ready cash."

A visit to Santa Clara Valley will disclose many orchards in which fowls are kept to destroy the bugs and worms so detrimental to successful fruit culture.

As an instance of the benefits derived from combining these two industries, I respectfully call attention to the fact that in orchards thus protected the canker worm has been kept in check, while in neighboring orchards, devoid of fowls, great expenditures of time and money have failed to accomplish as good results.

With all the advantages to be derived from keeping poultry in the orchard, but few objections can be urged against the proposition, some of which are without foundation in fact. With the exception of prune orchards, during the ripening of the fruit the fowls have not been found to be of any disadvantage. In the peach and apricot orchards they do not damage the fruit when ripening; but in the prune orchard it may be found necessary to confine the fowls during the dropping of the prunes.

In selecting fowls for the orchard probably no other class will prove more serviceable and cause less damage than the Asiatics, as the varieties included in this class do not fly high, hence they can not get into the trees and cause damage while the fruit is ripening.

All of the orchards of this State are capable of supporting a fine flock of fowls, and no orchard will be without them when our orchardists become fully aware of the advantages and profits resulting from the combination of these industries.

## NATURAL ADVANTAGES.

California offers ideal conditions for poultry-raising. It is a known fact that all fowls, both old and young, thrive on green foods. No State of the Union produces a greater variety of grasses and vegetables, and the fact that they grow and are cultivated the year round, cheaply and in great abundance, gives the California poultryman a decided advantage over Eastern breeders. Not only is this true of green foods, but the many varieties of grain of the best quality, and mill products, are grown, manufactured, and sold at less cost than in many other States. This fact, taken in connection with our excellent markets and steady demand, explains, in a measure, the success of our poultrymen, and to many should be an incentive to enter into this business, particularly those possessed of limited means and small tracts of land. If these facts were properly placed before the people of this State and of the United States, the importation of poultry and poultry supplies would cease. Many Eastern poultrymen who are put to endless trouble and great expense in preparing for the changes in seasons would investigate and surely avail themselves of these advantages in climate, soil, markets, and productions. Owing to the mild climate in this State, it is not necessary to build elaborate, air-tight buildings, such as are in use in the Eastern States. Any ordinary frame building, with watertight roofing, answers. It is an acknowledged fact that fowls raised in colder climates do not lay as many eggs as do our California fowls.

## INCUBATORS AND BROODERS.

In addition to the natural advantages, the incubators and brooders manufactured in this State are considered the equal of any manufactured elsewhere. Thousands of these machines, built on the best principles known in artificial raising of poultry, are shipped to all parts of the United States, and the large shipments to foreign countries are proof positive of the excellence and merit of these machines, which have given our manufacturers a world-wide reputation. Hundreds of mechanics and others who are not directly engaged in poultry culture are thus given steady and lucrative employment.

The introduction of the incubator and brooder has revolutionized this industry. The business has assumed enormous proportions, and each year shows a greater development. Hatching can be conducted continuously throughout the year, and it is easier to raise hundreds of chicks than dozens by the natural method. This practically gives the poultryman control of the conditions necessary to success, enabling him to raise thousands of chicks at the most profitable time of the year. The most money from poultry has been made by those who have familiarized themselves with the details of artificial hatching of chicks.

## POULTRY SHOWS.

There is no other feature of the industry which creates so much interest to the public. The constantly increasing interest in exhibitions proves that they are a benefit to the people and the State. In character, in advantage to exhibitors, and in all other particulars our shows equal in all respects the exhibitions held in other States. The numerous attractions and character of the displays always insure a large attendance, but it is a lamentable fact that our shows are few and far between.

Many sections of this State have never enjoyed the advantages of these objective and practical lessons. The State should not depend entirely on the liberality of individuals and associations to educate the people in this industry. A number of distinctly educational shows held throughout the State during the winter months would illustrate the progress made, and to the amateur would be a startling revelation of the magnitude of this business and a lesson in poultry art which would demonstrate and prove the value and advantages of the thoroughbred over common scrub fowls. A well-conducted show is a school-room for the visitor as well as for the breeder. Reliable and truthful information is furnished those seeking knowledge, and as an object lesson to the beginner it is of incalculable value, particularly as the impressions made and the knowledge gained are lasting.

### THOROUGHbred FOWLS.

Of the one hundred and eighteen varieties recognized by the "standard of perfection," possibly one tenth are bred for ornamental and the balance for practical purposes. In this article it is impossible to enumerate or fully describe the value and general characteristics of each separate variety. It will therefore be confined to the fourteen classes into which they are divided, namely:

#### 1st CLASS—AMERICANS.

Breed.	Variety.
Plymouth Rock	{ Barred. Buff. White.
Wyandotte	{ Silver. Golden. White. Buff. Black. Partridge.
Java—	Black.
American Dominique.	

The varieties included in this class are considered to be "general purpose" fowls. They are of medium size and average weight, that of matured specimens being about 9 pounds for males and 7 pounds for females. They are good layers, market well, and readily adapt themselves to any condition or climate.

#### 2d CLASS—ASIATICS.

Breed.	Variety.
Brahmas	{ Light. Dark.
Cochins	{ Buff. Partridge. White. Black.
Langshan	{ Black. White.

In this class is included the largest of the standard-bred fowls. Average weight of male, 10 pounds; of female, 8 pounds. It is not uncommon to see many specimens weighing 12 pounds and over. Of the many varieties they are among the most admired, on account of their quiet disposition. Aside from being a good table fowl, they are splendid layers, stand confinement well, and are especially adapted for the "city lot." They thrive exceptionally well in the Pacific Coast States, and as an all around practical fowl they are unexcelled.

## 3D CLASS—MEDITERRANEANS.

Breed.	Variety.
Leghorn	{ S. C. Brown.
	{ R. C. Brown.
	{ S. C. White.
	{ R. C. White.
	{ Black.
	{ Buff.
	{ Silver Duckwing.
Ancona.	
Minorca	{ Black.
	{ White.
Andalusian.	
Spanish.	

The general characteristics of these varieties are about the same. They are without doubt the best layers, and are very popular with all breeders of standard-bred poultry.

## 4TH CLASS—POLISH.

White Crested Black.  
 Golden.  
 Silver.  
 Bearded Golden.  
 Bearded Silver.  
 Bearded White.  
 Buff Laced.

In this class are included the most beautiful fowls recognized by the "standard of perfection." They are not only beautiful, but are excellent layers.

## 5TH CLASS—HAMBURG.

Breed.	Variety.
Hamburg	{ Golden Spangled.
	{ Silver Spangled.
	{ Golden Penciled.
	{ Silver Penciled.
	{ White.
	{ Black.
Redcaps.	

While the Hamburg fowls are considerably smaller than those in any variety of the Mediterranean class, still they are considered by many poultrymen the equal of any fowl as layers, and in beauty rank next to the Polish.

## 6TH CLASS—FRENCH.

Houdan.  
Crevecœur.  
La Fleche.

Of this class the Houdan is the most popular variety. They are fine layers.

The Crevecœur and La Fleche varieties are very good "general purpose" fowls, but are not extensively bred in America.

## 7TH CLASS—DORKINGS.

White.  
Silver Gray.  
Colored.

The varieties included in this class are not considered good layers, but as table fowls they can not be excelled.

## 8TH CLASS—GAMES AND GAME BANTAMS.

Breed.	Variety.
Games	Black Breasted Red.
	Brown Red.
	Golden Duckwing.
	Silver Duckwing.
	Red Pyle.
	White.
	Black.
Game Bantams	Birchen.
	Black Breasted Red.
	Brown Red.
	Golden Duckwing.
	Silver Duckwing.
	Red Pyle.
	White.
	Black.
	Birchen.

## 9TH CLASS—ORIENTAL GAMES AND BANTAMS.

Indian Game	{ Cornish.
	{ White.
Malay—	Black Breasted.
Sumatra—	Black.
Malay Bantam—	Black Breasted Red.

The varieties included in these two classes are bred for pleasure as well as for profit. The general characteristics and style are about the same, the difference being in color only.

Contrary to the general opinion and belief, the game fowls above mentioned and recognized by the "standard of perfection" are not bred for fighting purposes, but for general utility and pleasure, and, like the Dorkings, are excellent for table purposes and are fine layers.



## 10TH CLASS—BANTAMS OTHER THAN GAMES.

Breed.	Variety.
Sebright	{ Golden. Silver.
Red Combed	{ White. Black.
Booted—	White.
Brahma	{ Light. Dark.
Cochin	{ Buff. Partridge. White. Black.
Japanese	{ Black Tailed. White. Black.
Polish	{ White Crested White. Buff Laced.

These diminutive chickens are bred mostly for pleasure. They are general favorites with ladies and children, and are very popular with many breeders, who find them very profitable.

## 11TH CLASS—MISCELLANEOUS.

Silky—White.  
Sultan—White.  
Frizzles—Any color.  
Rumpless—Any color.

While the varieties included in this class are fair layers, they are bred principally for pleasure, and are usually quite an attraction in the show room.

## 12TH CLASS—TURKEYS.

Bronze.  
Narragansett.  
Buff.  
White Holland.  
Black.  
Slate.

Of all the varieties the Bronze seems to be the most popular. The standard weight of adult males is 36 pounds; of females, 20 pounds; and not infrequently specimens have attained 40 or 50 pounds weight for males and 25 to 30 pounds for females.

The White Hollands are much smaller and rank next to the Bronze in popularity, are considered equally as profitable for market purposes, and have many admirers.

Any remarks on the excellent qualities of these fowls for table purposes would be superfluous.

## 13TH CLASS—DUCKS.

Pekin—	White.
Aylesbury—	White.
Rouen—	Colored.
Cayuga—	Black.
Call	{ Gray.
	{ White.
East Indian—	Black.
Crested—	White.
Indian Runner.	
Muscovy	{ Colored.
	{ White.

All of the varieties are more or less popular. That which is most extensively bred at the present time is the Pekin. The Aylesbury, Rouen, Muscovy, and Indian Runner find favor with many of our breeders, and are bred for market purposes. The Indian Runners are noted for their good laying qualities.

## 14TH CLASS—GEESE.

Toulouse—	Gray.
Embden—	White.
African—	Gray.
Chinese	{ Brown.
	{ White.
Wild or Canada—	Gray.
Egyptian—	Colored.

The most popular varieties are the Toulouse and Embden. The Chinese are bred to some extent, but the other varieties are bred in very limited numbers.

There is always a good market for geese, and if properly handled they can be bred at a good profit.

The foregoing review of the different varieties of fowls may not prove of great value to the experienced poultryman, but to the "general public" it will prove interesting in showing what progress has been made by practical poultrymen in producing the many different varieties by scientific mating.

That the thoroughbred fowl is superior in every way to the common scrub fowl has been proven by all of the experiment stations established in the Eastern States.

The many excellent poultry journals published in California furnish material for valuable courses in all branches of poultry culture; for comprehensive research, scientific method, and practical utility they are unrivaled by any other publications. Their inestimable value and direct benefit to poultrymen are apparent to all who realize the importance of a scientific education. To them, as well as to the State Agricultural Society, great credit is due for developing and promoting this industry.

There is practically no limit to the extent to which this industry can be developed, and I trust that the State will recognize its importance by

making an annual appropriation, as is now done by many Eastern States.

The United States census reports show that in California on June 1, 1900, there were 55,479 farms; the value of poultry being \$1,877,489; eggs produced, 24,443,540 dozen, of the value of \$5,864,679.

The following were the receipts of dressed and live poultry received over the lines of the Southern Pacific Company from points outside the State during the calendar year 1901: Dressed poultry, 3,363,790 pounds; live poultry, 4,701,660 pounds.

The Chamber of Commerce of San Francisco reports for 1901 the following receipts of eggs from interior California points: 8,564,940 dozen.

## RAISING POULTRY IN THE SAN JOAQUIN VALLEY.

BY GEORGE ANDREWS, SECRETARY FRESNO POULTRY ASSOCIATION.

Should I tell you that if I had all the chickens and eggs that are produced every year in the United States I could buy all the gold, silver, and other minerals mined in the United States in a year, and pay the interest on all the farm mortgages besides, you would probably not believe it. If you were told that one year's product of the hen would buy the entire wheat and cotton crops of this country, you would probably doubt that also. Again, if I told you that the product would equal the total value of the sheep, wool, hog, and potato crops of the land, that would sound "fishy," too. Yet all these are facts.

The total product of poultry, that is, eggs and fowls sold on the market, is estimated, after careful and thorough investigation, as being about \$290,000,000 per year.

The question that should interest us most is, "How much of this does our State produce?" Five million dollars' worth less every year than she should. Why? No one perhaps can tell. Every year from two to three million dollars that should stay at home are sent out of California for eggs and poultry, and we should export that much more.

When the farmers wear out the soil of their old farms; when they are settled down like they now are in the East; when all the natural changes have come about; when the land has become so thickly settled that eighty acres will be a big farm for one man to own or manage, and when the people become more settled and not so everlastingly "rushed," then, I think, California will begin to produce more poultry and will be able to supply the home demand and perhaps export a little.

As to the adaptability of the State, and this valley in particular, to the growing of poultry, I can not see why it is not as good as any place in the world. It has many advantages over the Eastern States, and, possibly, one disadvantage. That disadvantage is the heat of summer. The principal advantage is that the fowls can run out of doors all winter, thereby saving a large expense in the way of housing and extra care.

Alfalfa, which is one of the best green foods known for poultry, can be had here green every day in the year, providing green feed, which is expensive in the East, and it is very essential to egg production.

Wheat and Egyptian corn can be grown here as cheaply as in any place in the world.

The winters are never cold enough to freeze the combs or wattles of even the Mediterranean breeds.

A house with a whole side out, just so it has a roof and shelter from prevailing winds, is all that is needed for housing.

In the East, from which we import carload after carload of eggs and

poultry every year, houses have to be built with double walls to prevent the birds from freezing.

Land that is too sandy for almost anything else is the best kind of a place for poultry yards, and it can be had very cheap.

Anywhere where water can be had and shade provided poultry will do well. Orchard and poultry make a good combination—the fowls will rid the trees of many worms and insects, while the droppings are a continual fertilizer for the soil.

This year, for the first time in the writer's knowledge, eggs have been shipped from California to the East. Being in the telegraph business, I marveled at the number of telegrams coming to Fresno and surrounding towns inquiring for eggs, and upon investigation learned that they were being bought up and shipped East. Thus the ice seems to have been broken, and California should keep up the movement and soon stop the importation of "Eastern eggs."

"Eastern eggs" are eggs that are bought up in great numbers in Kansas, Missouri, Iowa, Indiana, and other Eastern States, in the summer while they are very cheap, are shipped to Chicago, where they are put in cold storage until the price goes up in winter, and then are taken out and shipped all over the country at prices about three times higher than what they were bought for. If the farmers will only raise enough poultry and properly feed and care for their chickens, as they do for their cows or horses, there is no reason why we could not produce eggs in the winter and early spring, while the Eastern States are yet covered with snow and ice, and ship them East and secure a good price for "fresh ranch eggs," which would readily sell for one third to one half more than "stored eggs."

Hens can be made to lay in this valley during the whole winter to a great extent, and to be doing their best by the first of February if properly cared for; and as fresh eggs are very scarce in the East before April 1st, it surely could be made a paying business.

The hot summer months are quite as severe on poultry as on other stock, but chickens can be profitably kept through the summer if green pasture, plenty of fresh water, and shade are provided.

The breeds that feel the heat most are the Asiatic breeds; that is, Brahmas, Cochins, and Langshans. They are so heavily feathered that they feel the heat more than the lighter breeds, and are therefore not recommended as a profitable fowl for this section. Their principal virtue is in their large size, which on the market, if sold by the pound, would cause them to bring a good price. They are poor layers, and being very large, their flesh is more or less coarse.

The Mediterranean class (that is, Leghorns, Minorcas, Andalusians, and Spanish) are the best layers in the poultry family; but while they are the best layers they are very poor as dressed poultry. They are of small size and their meat is not of the best.

To strike a happy medium between the above two breeds has always been the aim of the ever-progressive Yankee, and the American class, the Plymouth Rocks and the Wyandottes, is the result. Between the Plymouth Rocks and the Wyandottes there is not much difference. The Plymouth Rocks are a little larger, but otherwise about the same. Both are good average layers the year round, while, when dressed for market they are simply the best, their carcasses dressing from five to ten pounds at maturity, and the quality of the flesh can not be surpassed. Their rich

yellow skin makes them very attractive as an edible fowl, while their large plump forms leave little to be desired. Taken the year round, they will produce nearly as many eggs as the Mediterraneans, while at testing stations where different breeds have been kept and fed for eggs for a year at a time, the Plymouth Rocks hold the world's record, 282 eggs per fowl per year. This of course is an extreme case, where the best of care and feed was had the whole of the time; but several other breeds had the same care and feed, yet could not come up to the Plymouth Rocks.

Ducks for market will, in my belief, be one of the great exports of this valley in years to come. Ducks, for some unaccountable reason, seem to do particularly well in this valley. Their eggs are of little value except for cooking, as they have a very large yolk, and when broken are very red and have a strong taste which most people dislike; but for cooking they should be preferred to hen eggs, as they are larger and richer.

Mammoth white Pekin ducks can be grown to weigh from five to eight pounds in twelve to eighteen weeks' time, and can be sold as roasters to a good profit if properly marketed. Chinese are great lovers of ducks, and San Francisco could no doubt use all that could be produced, at good prices. Many people are of the opinion that ducks must have water to be raised successfully. Not so. The most successful duck-raisers in the country raise their stock on dry land, and many ducks never have a swim during their lifetime. Some of the best ducks ever shown in the Fresno poultry show were raised without swimming accommodations.

This valley ought to be the broiler hotbed of the Pacific Coast, and for the East, too, for that matter. The winters being so mild, and the warm weather coming so early, would enable the progressive poultryman to put two-pound broilers on the market two months earlier than the Eastern poultryman could. Hens can be made to lay (and the eggs very fertile, too) during the winter, at least in such numbers as to bring out a large number of chicks at almost any time.

Why is California noted as the great fruit State? And why are such enormous prices paid for early California fruits? Simply because her fruits are the first in the market and they bring the very highest prices. Broilers, and eggs as well, could be made to do the same thing, if the people but realized it.

The warm spring days of this valley are the very best for growing chicks, and incubator chicks do not need half the brooding that they require in the East, and consequently grow faster and mature quicker when they have the sunshine to run and exercise in, instead of a close, ill-ventilated brooder.

For poultry-raising this valley is much to be preferred to the coast counties, on account of the fogs that prevail there in the spring, and which are seldom seen here after February 1st.

The poultry business is in its very infancy in this county as yet, there being only two or three yards of any size where poultry is made the principal object.

In conclusion, I would say it would be folly to try and run a modern poultry farm with scrub stock. Many people imagine a "hen is a hen," that a scrub will lay as many eggs as a thoroughbred, that thoroughbreds are delicate, besides numerous other fallacies. Has thoroughbred

cattle broken Miss Eshleman's (now Sherman) Minnewawa dairy? What has pure blood done for Palo Alto stock farm? Just as great results can be accomplished proportionately with poultry, if worked right.

Many people think that any one, however inexperienced, can raise poultry. Such people pay dearly for their belief every year. It takes as much experience, thought, study, and careful attention to successfully raise poultry as it does to grow fruit, raisins, or fancy horses or cattle. There are a thousand and one little things that a successful poultryman must know. The raising of exhibition poultry is a science that is only mastered by years of careful study and experiment in mating and mixing of blood. Raising fancy poultry and raising poultry for market and eggs are two quite different things. Each is a field in itself, and each requires different methods of mating, feeding, and care.

Individual chickens have sold for as high as \$250, where real sportsmen are interested in the show room. To say that breeding for fancy points is fascinating is really putting it mildly, if a person has any love for the feathered pets. The birds that win the blue ribbons at the show are not picked up on the farm from among the flock, but are usually birds that have had special care for three, four, five, or six generations back, each year being carefully studied and scientifically mated to produce something better "next year," until finally the top is almost reached. There never has been a perfect bird produced, and probably never will be; but the fact that birds raised in Fresno County have been shown against the best birds from all over the State, and against many imported from the East, and have won the blue ribbon, proves conclusively that Fresno County is as well adapted to raising fancy poultry as to raising poultry for market.

## BEE-KEEPING IN CALIFORNIA.

By R. H. YEARNshaw.

The bee-keeping industry in California commenced in 1853 by the introduction of a few colonies brought from the East. In 1856, Mr. J. S. Harbison brought a large shipment of bees from New York, to which he soon afterward added other consignments, nearly all of which were taken to Sacramento. Later, it was discovered that Southern California was an ideal honey location, and it was not long until there were a number of apiaries in that section of the State.

The industry has been successful in this State; that is, with live, energetic men, and women also, barring the few crop failures. Southern California has had three almost total failures—in 1898, 1899, and 1900. The bees have been largely decimated thereby, and now only the most intelligent, energetic bee-keepers have any bees left. The year 1900 was a partial failure all over the State, some favored localities harvesting part of a crop. But in the good years—Ah! that's what would make one's mouth water—*three hundred carloads* were shipped East, hundreds of tons were shipped by water from San Francisco, and tons and tons were consumed in the State. Such a year was 1897, and 1902 promises to be another such a record-breaker.

The future of the industry in the State is very promising. True, the area of the sages in Southern California is getting less and less, but the area of alfalfa in the irrigated sections is being rapidly added to, which will more than counterbalance any loss of other honey flora. Besides, alfalfa is a surer honey-producer—not giving the phenomenal yields of the sages, and never being a total failure.

The quality of California honey is second to none. The honey from sage is clear and limpid, as is also the honey from alfalfa, where perfectly free from being mixed with dark honey. There are other kinds of fine, white honey, but they are apt to be mixed more or less with darker hued honey, which, however, does not hurt the eating qualities.

In regard to locations for honey-producing, only generalizations can be given, as a place may be either overstocked or barren of honey flora, while a few miles in either direction there might be a virgin field, simply flowing with honey. In the San Joaquin Valley from Kern to Merced there are large areas of alfalfa, and where not overstocked would afford excellent locations. The Sacramento Valley also has a great many good locations, some partly stocked. Southern California has a great many good sage locations left yet. All through the State in the hills and small mountain valleys are a great number of openings. In considering location, the closeness of transportation facilities must also be taken into consideration.

The honey flora of California presents a great diversity. Besides the white and black sages and alfalfa, before mentioned, there is a long list of plants that produce more or less honey, including fruit bloom, bur and sweet (or sour) clovers, golden rod, Spanish needle, smartweed, alfilaria, wild lilac, blue tarweed (the yellow tarweed produces rank, black honey), buckwheat, manzanita, buckeye, button-willow, yellow



willow, locust, eucalyptus, etc. Some of the above blossom early in the spring, and are more valuable in building up the strength of the bees for a later flow than they are for a crop of honey.

To sum up: After one has found a good location and is willing to work a little, and also has something with which to tide over poor years, he may rest assured that for time and money invested very few industries will yield a better income, at the present prices of honey.

The United States census reports show that California is the second producer of honey, being a very close second to Texas. The yield of honey in California for 1899 was 3,667,738 pounds. The following counties lead in the production: Fresno, San Diego, and Tulare. The State of New York is third in the list of honey-producers in the United States.

The San Francisco Chamber of Commerce reports the yield of honey in California in 1900 as 2,208,000 pounds, and for 1901 as 4,600,000 pounds.

### BEES IN THE ORCHARD.

As a contribution to the current discussion of the relation of bees to fruits, the experience of Fred Buck of Vacaville is interesting.

Mr. Buck has two hundred and seventy hives of bees. Bees are, of course, a source of great profit, and on this account should be kept by other orchardists. They get most of their honey from the hills, and during the summer up to the first of July find plenty of flowers in the hills from which to secure food. They also gather considerable honey in the fall, the months of September and October being usually the best months of the fall, although in some seasons they gather a good deal of honey as late as November. They do not damage fruit in any particular. Mr. Buck keeps his hives in a peach orchard.

But the bee industry is deserving of consideration by orchardists from another standpoint. It has been recognized that the pollenization of the cherry blossoms was a necessity. For the purpose of pollenizing the cherry blossoms, it has been deemed advisable to plant different varieties scattered about, and even to mix the wild cherries about in the orchards. With a good many who recalled the big cherry crops of the past in Vacaville, it has been a matter of bee or not to be. They recall the early days of Vacaville, when the cherry crop was unfailing, and persistently urge that wild bees were then numerous. For one reason or another, mountain fires perhaps as much as anything, the wild bees seemed to desert the valley, and just in that proportion did the cherry crop fall below the normal.

Mr. Buck finds that the bee crop is an insurance of the cherry crop. He says that the season of 1901 gave him the biggest crop of cherries he ever enjoyed, when his acreage was only one third as large. He also says that he had at that time the largest number of bee hives. He is positive that the bees are underwriters of his cherry crop, and will not part with them, because, as he says, no bees, no cherries; plenty of bees, plenty of cherries. He says that bees do no harm to orchards or to drying fruits, except that when pears are being dried their sugary sweetness attracts them, and it is found necessary to cover drying pears with netting to keep off the busy bee. Despite this objection Mr. Buck is an enthusiast in the matter of bee culture, and proposes to continue the industry which has been profitable to him directly, and indirectly even in a greater degree.

## SILK AND SILK CULTURE IN CALIFORNIA.

BY MRS. CARRIE WILLIAMS, OF SAN DIEGO.

This is, indeed, a subject of deepest interest to the citizens of the "Golden State," because there is money in it—millions undeveloped, only waiting to be called forth to the light of day by wisely applied energy. While wealth and prosperity are not the only sources of happiness, they are undoubtedly large factors in securing much that is desirable in life.

Whatever branches of industry give employment to the masses in any single line of work, without any evil results, or complications to offset the good of providing employment, are certainly more to be desired than those lines of work or business that, while providing occupation in one way, are in another way unfitting a large percentage of citizens for the purest and fullest enjoyments of life. I will only mention two industries in contrast, viz.: silk and tobacco. The use of tobacco follows its production and manufacture; and it is given in the regular lines of statistics that at the present time *seventy-five per cent* of the youth of our beloved land are unfitted for military duty, through the use of the alluring cigarette. From the production and manufacture of silk there is nothing to be feared. It gives legitimate, healthful, pleasant employment to men, women, and children, without the least danger of ever leaving behind a moral, physical, or intellectual blot or stain. The silk industry has enriched every nation that has ever engaged in it, and its history dates back more than twenty-seven hundred years before the Christian era.

As far back as the year 1860 there was in California quite an interest awakened in the production of silk, through the intelligent efforts of Louis Prevost, a Frenchman. He did wonders in demonstrating to the people what might be done with the silkworm in California. He went to France, intending to return with a large invoice of choice silkworm eggs; but unfortunately he was taken sick, and died without carrying out his intention. Thus the industry seemed to be left without a head, and, like all projects in like position, it gradually dwindled down for years. In a measure the industry was revived by the action of the State Board of Silk Culture, and then by the Ladies' Silk Culture Society. With the flight of years, and for reasons I have not now time to mention, both these associations or societies ceased to put forth united efforts in the interests of silk culture.

The climate and soil of California, especially that of the southern portion of the State, combine to make this State stand unrivaled as a silk-producing region. And the mulberry tree, in all its many varieties, embodies more hidden wealth than did all California's gold mines in her early days.

The prerequisites to successful silk culture are a dry, healthful climate for the worm, and a good productive soil for the mulberry tree.

Silk as a business may be classified on three separate lines, viz.: The production of silkworm eggs, the production of silk fiber, and the manufacture of the fiber into silk. Each of these lines will yield to those engaged therein a just recompense for expended labor.

For the silkworm eggs brought into use yearly, many millions of dollars are expended. No country in the world can produce finer or more healthy eggs than California. If intelligent effort were put forth, we might, without very great labor, supply a large portion of the markets of the world. Healthy eggs are the very foundation of the whole silk business. When, less than fifty years ago, the silkworm disease well nigh proved fatal to the great industry, Japan netted to herself \$85,000,000 in a few years. Disease still lingers in all the silk countries of Europe. I have heard recently that an Italian capitalist is now in California looking up a location where he can cultivate the mulberry tree, and raise eggs for the European markets. In some localities he found an abundance of mulberry trees, but not so desirable a climate as in San Diego and other portions of Southern California. This one branch of the silk business might be made very profitable to California.

Not only as to climate and soil are we so highly favored, but also as to length of season. While Italy and France count on a silk season of only six or seven weeks, Southern California can count on eight or nine months of each year. It is stated on authority that here trees grow in one year as much as they do in three years in the silk countries of the far-off east. And, too, while the general idea is that the winter months is the best time to put in cuttings of the mulberry tree, experience has proved that they may be planted during all months of the year. The fact of continuous planting gives continuous foliage in the frostless regions, and continuous foliage provides for continuous hatchings of the silkworms.

It has been proven beyond all dispute that silkworms kept in cold storage below 40° Fahr. may be taken out just whenever it is convenient to rear them. In 1901, I took from cold storage eggs that had been placed there fifteen months previous, and I found that the worms coming from them were strong and perfectly healthy. But let it be remembered that there is a proper time to put them in, and that any deviation from that time will surely prove fatal.

Fifteen to eighteen hundred pounds of leaves will feed for life 40,000 worms, which is the product of one ounce of eggs.

The use of silk has been on the increase for more than four thousand years. Within the last decade the increase has been at least tenfold; and every year adds fresh impetus. Before, and for some time after the Civil War, the United States manufactured only fifteen per cent of all the silks we used. Now the American people manufacture eighty-five per cent of the silks used in this country. Not only has the output for home use been so largely increased, but our manufactures are placed in competition with the work of all other nations. As a result, the Richardson Silk Company, of New York, manufacturers of sewing and embroidery silk, took the first premium at the Paris Exposition (\$5,000 and three gold medals).

Now, this increase in the quantity and quality of silk manufactured

in the United States is not in any way due to conditions of the country being better adapted to the manufacture of silk; nor is it due to the influence of cheap labor, as is shown by the following statement by Mr. Cheney, president of the Silk Manufacturers Association, who said that their employes are paid "about twice as much as in England, three times as much as in France, three and a quarter times as much as in Italy, and probably ten times as much as in China and Japan." (Revision of Tariff, Jan., 1890, page 606.)

Thus we see that the advance of silk manufacture in the United States has been very rapid during the past few decades, yet no special reason can be given, except that the enterprise and superior inventive genius of the American people seemed to lead them into it.

Why is it, then, that people do not more largely engage in the production of silk when there are so many advantages in its favor? There is no mystery about the rearing of silkworms. The exercise of common sense and good judgment is the one thing necessary, as it is in all things where success is achieved. The production of silk must be made to radiate, not to concentrate. There must be in every State a grand center adapted to the business. Large tracts of mulberry trees must be planted and be under the care and guidance of efficient helpers. It is no use to try to establish the silk industry anywhere by simply making it an amusement, by having a few trees and a few worms to feed or starve at the will or caprice of the owner. No, this will never do. Small lines may flow into large lines, and thereby increase the general whole, but large lines are called for imperatively, and into these, when once established, all the smaller lines will continuously flow, to the benefit of all concerned.

The retail cost of the silk and silk goods of the world is about \$600,000,000. The Silk Producers' Association of Lyons gives the world's output of reeled silk for 1890 at 34,583,555 pounds. This does not include Australia or North and South America. Multiply these figures by \$4, which is a fair average price per pound for reeled silk, and \$138,334,220 is the result. Deduct this amount from the retail price paid for silk, and \$427,082,225 remains. This balance goes to the manufacturers and merchants. Surely this sum is worth looking after.

A few years ago there were but four hundred silk factories in the United States. Now there are more than nine hundred. These are distributed in nineteen different States, principally in the Eastern States. In California there is but one small factory (so far as I know) where silk goods are manufactured, and that is in Oakland. The Carleson-Currier Company, of Petaluma, I believe make only underwear, hosiery, and sewing and embroidery silk.

The November, 1901, report of the Silk Association of America shows that the total New York importations of silk goods in that month (five weeks) amounted in value to \$2,271,229, as compared with \$1,789,118 in November, 1900. The free raw materials brought in were valued at \$1,429,356. A very large percentage of this raw material was reeled silk, which is twenty-five per cent manufactured, but which now, and ever since the Civil War, comes in free of duty. These irregularities should be looked after by our Representatives in Congress when the question of the tariff is being discussed. Our exports in silk are on the increase, also. In 1900 they amounted to \$214,481, and in 1901 to \$236,924. Though the increase is small, it is significant.

Last year Cuba purchased \$526,000 worth of silks, of which we furnished but \$24,000—less than five per cent. Yet, if her people had had due instruction in the principles of silk production and manufacture, she might have exported far more, and still retained enough for home use. And in like manner very many of the isles comprising our newly acquired possessions might bring to the nation their quota of self-supporting surplus ability.

We claim to be the most advanced nation on the earth. The history of our nation, as it is being written, proves that we have indeed a very important part assigned us in the world's evolution. Education is the pivot around which all great movements turn. This being our destiny, who can for a moment doubt that the American people will yet attain a higher and greater degree of excellence, both in the production and in the manufacture of silk, than has yet been reached by any other nation? Here in California we have all the essentials necessary to make this State the grand emporium of the world for the silk business, from the precious seed to the most elaborate and highly finished designs sent forth from the most complicated machinery.

For further information I refer you to the following treatise: "Complete instructions in rearing silk worms, care of millers, and preservation of eggs; also how to build and furnish cocooneries, to plant, prune, and care for mulberry trees, together with much valuable information as to the silk industry in general," by Mrs. Carrie Williams, sericulturist, of San Diego, California.

## SUGGESTIONS RELATIVE TO LIVESTOCK EXHIBITS.

BY JAMES WITHYCOMBE.

CORVALLIS, OREGON, April 14, 1902.

*To the Honorable State Board of Agriculture, Sacramento, California:*

GENTLEMEN: Perhaps a few suggestions relative to exhibits in some classes of stock, from one who has had the honor to act as judge at the California State Fair, might not be amiss. At the outset permit me to compliment the management of this fair for its clean-cut business methods in its dealings with both exhibitors and spectators. The California State Fair is one of the best conducted fairs that I ever had the pleasure to attend, although a few criticisms will be interspersed with my expressions of commendation.

The display of livestock in the item of numbers is not commensurate with the great possibilities of the livestock industry of the State. This is the fault of the farmer, for no just complaint can be made against the very liberal premiums offered or the treatment accorded by the association; neither of the cost nor of the facilities for the transportation of the livestock to and from the Fair. It is probably an unconscious inertia on the part of the stock-breeder. California should be equally as famous for the numbers and superiority of her cattle, sheep, and swine as she is for her fruits, cereals, horses, and minerals. Stock-growing is the corner-stone to successful agriculture. The farmer, however, must remember the fact that it costs no more to maintain an animal which will yield the maximum returns in dairy products, meat, or wool, than it does to maintain one yielding the minimum returns. There is an existing relationship between form and function, hence the stock-breeder, to be successful, must study the various types of breeding-animals. An annual pilgrimage to the State Fair, where animals of individual excellence can always be found, affords an excellent opportunity for this work. What is still better, if you are a breeder, is to bring along your best animals and enter them in competition with the product of the skill of other breeders. There is no school like this for giving a practical demonstration. Agricultural fairs are educational to the highest degree when competition is large and keen and when the awards of premiums are made by competent persons. However, no complaint can justly be made against the educational features of the California State Fair. While some of the breeds of domestic livestock are not represented in large numbers, the excellence of those usually found on exhibition fully make up in quality what may be lacking in numbers. These deductions were formed from observations made during three annual visits to the Fair. The dairy breeds and swine were exceptionally strong, both in point of

numbers and in quality. The beef breeds were well represented, very notably so by those forwarded by breeders in the adjoining State of Nevada.

Breeders should have high ideals relative to the individuality of their stock. The scales and Babcock test are the crucial test for the dairy cow, and the butcher's block for the meat-producing animals. Animals bred for specific purposes should possess a distinctive type. The head is usually a good indicator of the form and disposition of the individual. For example, the rather long, clean-cut, refined head of the dairy cow is generally accompanied with a thin neck, sharp withers, a broad, thin loin, flat, thin thighs, and a capacious udder. The short, broad, meaty head of the beef animal is generally supplemented with a deep, thick carcass, heavily padded with flesh. The broad snout, short face, and heavy jowl of the hog are generally indicative of a well-developed frame, affording arched ribs, broad back, and large hams.

In conclusion, I trust that the cattle, sheep, and swine breeders will manifest their appreciation of the praiseworthy efforts so intelligently directed by their State Board of Agriculture for the upbuilding of the livestock interest of the State by making larger exhibits, and thus aid in the development of one of the most important branches of agriculture.

I beg to remain,

Very truly yours,

JAMES WITHYCOMBE,  
Director Oregon Experiment Station.

## CONTAGIOUS AND INFECTIOUS DISEASES IN ANIMALS.

BY DR. CHARLES H. BLEMER, STATE VETERINARIAN.

### BLACK-LEG.

Black-leg, symptomatic anthrax, or quarter-ill, was formerly supposed to be a form of anthrax, but it is now known to be an entirely different disease and due to different germs. Black-leg is caused by a specific bacillus, which enters the body sometimes by means of the food or drink, but usually through scratches or wounds in the skin. The spores of this germ are very hardy, and will live in a dry state for a long time. They are easily carried from one ranch to another by animals or man, and also can be distributed by running water.

The symptoms of black-leg are characterized by its very rapid spread, which, with but few exceptions, ends in death in from one to three days. It is characterized by a rapidly increasing swelling of the skin, which crackles on being touched, due to the gas contained in the tumor. The swellings may appear on different parts of the body; they are generally found on the upper parts of the thighs, neck, shoulders, and the lower parts of the chest and loins, but never appear below the hocks or knees. The swellings are at first very small and painful, but rapidly spread and obtain unusual size, often extending over the whole trunk; they become cold, and no pain is felt by the animal when an incision is made into them. After an incision a dark red, frothy, unpleasant-smelling fluid flows from the wound. The general symptoms are suppression of appetite and rumination, high fever, lameness, and drawing of legs; breathing becomes difficult also.

The post-mortem examination discloses the tissue in the region of the swelling to be infiltrated with blood and containing bubbles of gas. The muscles surrounding the tumors are of a dirty brown or even of a black color. The blood is of normal color, but easily coagulates. The spleen is unchanged.

Black-leg is clinically distinguished from anthrax by its characteristic crackling and tumors containing gas, which never occur in anthrax, and by the normal condition of the blood and the spleen.

This disease affects cattle, sheep, and goats. The cattle commonly affected range in age from three to eighteen months. Occasionally calves under three months and cows over two and a half years old are affected, but this is the exception.

Owing to the rapid and violent course of the disease, treatment is of little value. Various kinds of remedies and methods have been tried,



but without success, and in many instances worthless substances have been placed on the market and sold as preventives. Setoning, rowelling, bleeding, etc., are often practiced, but the blood and serous fluid carrying germs of the disease are in this way scattered over the ground, thus endangering the lives of the well animals. The only method of combating the disease is to prevent it by vaccination.

Vaccination was first introduced by the French scientist Arloing, in 1883. Arloing's methods were improved upon and modified by Kit, the germ scientist, and his latest process is the one universally adopted.

During the last fifteen years many million head of cattle have been vaccinated, with great success. The cost per dose is so insignificant and the results are so satisfactory that vaccination is looked upon as indispensable by cattle-raisers. The process of vaccination is simple and can be carried out by any intelligent stockman, and immunity usually lasts a lifetime.

Relative to the age of susceptibility, the following statistics are given: One half of 1 per cent of deaths occur before one month old, 8 per cent occur between one and two months, 13 per cent between two and three months, 33 per cent between three and four months, 41 per cent between four and five months old. Before five months old, calves are usually classed as six months old, so that statistics between the months of five and six are unreliable. The most susceptible age is between six and eighteen months. This being the case, the safest method would be to vaccinate between the ages of three and four months.

During the past five years many million doses of black-leg vaccine have been manufactured and sent out for experimental purposes by the Bureau of Animal Industry of the United States Department of Agriculture, Washington, D. C.; and statistics obtained by this Department and those compiled by chemists such as Park-Davis Co. of Detroit, Mulford Co. of Philadelphia, Pasteur Co. of Chicago, and the Cutter Analytical Laboratory of Fresno, Cal., prove conclusively that vaccination is a positive preventive of this disease.

### ANTHRAX.

Anthrax, or charbon, is perhaps the oldest known and most fatal disease of animals. It attacks all animals, but most frequently cattle; it is also communicable to man. It appears to be alluded to in the second book of Moses (ix:10) as the sixth plague of Egypt. In the third book of Moses stress is laid on the possibility of transmitting the disease from clothes to man. An epidemic which was described by Homer in the first book of the Iliad, and which raged among men, mules, and dogs, seems to have been anthrax. The symptoms vary in different species of animals and also in individual cases, as to whether the intestinal canal, skin, lungs, etc., are infected.

In pre-acute or apoplectic anthrax the animal becomes suddenly ill, and dies in convulsions after a period of illness varying from a few minutes to an hour at most.

In acute anthrax the course is somewhat slower, and lasts from two to twenty-four hours. The animal becomes feverish and shows either congestion of the brain or congestion of the lungs. In the former, the general symptoms are restlessness, rearing, bellowing, running to and fro, convulsions, and death. In the latter, difficult breathing, wheezing,

bloody discharge from the natural openings of the body, and finally death by suffocation.

The sub-acute form is termed anthrax fever, and is the ordinary kind which attacks horses and cattle. The symptoms are generally the same as in the acute form, except that they are more clearly defined and their course is longer—one to seven days.

The forms of anthrax with visible localization appear first as carbuncles and swelling of the skin, which is known as a carbuncle disease. It occurs more frequently in horses and cattle. Carbuncles and swelling of the mucous membranes of the mouth and throat is the form most frequently seen in dogs and pigs.

A post-mortem examination shows the spleen or melt to be from two to four times its natural size, and the blood is thick, blackish, and dark.

Anthrax is distributed all over the world and in nearly every country. It is chiefly met with in districts where the soil is boggy and swampy, and the germ will live for years in such localities.

As in black-leg, the treatment is very unsatisfactory, as there is at present no known cure. The only way of combating anthrax is to prevent it by vaccination, which is equally as successful as in the treatment of black-leg.

#### VERMINOUS BRONCHITIS OF CALVES.

While in no sense a new disease, until recently it has not been brought to the attention of livestock sanitariums. This disease has no doubt existed in California for several years. It is very often overlooked, or diagnosed under another name. It is known to have existed in several sections of this State—in Los Angeles, Fresno, Humboldt, Del Norte, Sacramento, and other counties.

A prominent Los Angeles veterinarian stated that he believes the disease had existed in that county for several years, but was pronounced as being distemper, no one having taken the trouble to make a thorough post-mortem examination until recently, when the true cause was discovered.

The cause of this disease is recognized as a hair-like worm from one half to three inches in length, which inhabits the bronchi or bronchial tubes.

The symptoms are an infrequent, dry cough, which gradually increases, becoming strong and husky, and ending in paroxysms and suffocation as the disease advances. Mucus streaked with blood and then worms are finally expelled from the mouth and nasal cavities. The animal, through loss of nutrition, etc., rapidly becomes weak and emaciated.

It is believed that the embryos do not develop in the host, but must necessarily be expelled to pass the first stages of their existence. They live in water for an indefinite period, and it is said that a dried embryo, under certain conditions, will revive when placed in water. No satisfactory theory has ever been given as to how the worm enters the bronchi, but the *infection*, in all probability, takes place through water or food, such as damp grass.

Internal treatment, inhalations, and inter-tracheal injections have been used as treatment for this disease. But such experiments as we have had show that inhalations combined with tonics are more satisfactory; but, owing to the hardness of the worm, treatment of any

kind has not been of much benefit. Inter-tracheal injections of chloroform, turpentine, carbolic acid, etc., apparently relieve the infected animal, but abscesses are apt to follow when any of the fluids get into the tissues. Chloroform or ether combined with oil of turpentine and amber, equal parts, with a little formaldehyde as an inhalation, gives the best results; pour one or two teaspoonfuls into the nostrils, lift the head, and allow it to vaporize. Stimulating tonics, for the purpose of arousing digestive functions, aid recovery.

The preventive measures to be taken against this disease are rather uncertain, due to our ignorance of the life history of this parasite. However, the draining of damp pastures and the destruction of animals which have succumbed to this disease are of the utmost importance, and calves should be kept from infected pastures.

### GLANDERS.

Section 402½ of the Penal Code of the State of California is as follows:

"Every animal having glanders or farcy shall at once be deprived of life by the owner or person having charge thereof, upon the discovery or knowledge of its condition; and any such owner or person omitting or refusing to comply with the provisions of this section shall be guilty of a misdemeanor."

Let it be understood at the beginning that glanders and farcy are one and the same disease, differing only in that the first term is applied to the disease when the local lesions predominate in the internal organs, especially in the lungs and the air tubes; and that the second term is applied to it when the principal manifestation is an outbreak of the lesions on the exterior of the skin of the animal. The term glanders applies to the disease in both forms, while the term farcy is limited to the visible appearance or external trouble only; but in the latter case internal lesions always exist, although they may not be evident.

Glanders is a contagious, constitutional disease of the genus *equus* (horse, ass, and mule), and is communicable to man, sheep, goats, dog, cat, rabbit, and guinea pig. The course is variable, eventually producing the death of the affected animal. It is characterized by the formation of neoplasms of connective tissue, or tubercles, which degenerate into chancres or ulcers, from which exudes a peculiar discharge. It is subject to various complications of the lymphatic glands, of the lungs, testicles, internal organs, and the subcutaneous connective tissue.

*Symptoms:* The beginning of chronic glanders is often insidious and passes unobserved. The first symptom is generally a discharge of a whitish-gray mucus from one or both nostrils, the quantity of which is variable, and may even disappear at times. This discharge is frequently streaked with blood. Small tubercles, ulcers, or nodules may be discernible on the mucous membranes of the nostrils. These may be just inside the wings of the nostrils or on the septum which divides one nasal cavity from the other, and may be easily detected; or they may be higher in the nasal cavity, or form in the larynx, windpipe, or lungs. On healing, the chancres on the mucous membrane leave small, whitish, star-shaped scars, hard and indurated to the touch, and which remain for almost an indefinite time.

The eruption of the ulcers and discharge soon cause an irritation of the neighboring lymphatics; and in the intermaxillary space, deep

inside the jaws, we find an enlargement of the glands, which become hard and nodulated and adherent to the base of the tongue—an important symptom in diagnosing this disease.

Glanders can only be combated with any efficiency by preventive measures, and by strict application of sanitary police measures which prescribe laws and regulations for the destruction of affected animals.

### TUBERCULOSIS.

Tuberculosis is an infectious and contagious disease, produced exclusively by the *Bacillus tuberculosis*, discovered by Koch in 1882. The mode of infection of the organism and the evolution of the tuberculous process are not the same in all animal species. It is principally through the lungs and intestines that the tuberculous bacillus reaches the organism.

Tuberculosis of the ox is one of the oldest diseases which has been mentioned in domestic animals. Moses, in his laws, forbade the consumption of the meat of animals which were affected by "phthisis." Numerous measures relative to this disease are to be found in the Talmud, and particularly in the Gemara (fifth century after Christ), where frequent mention is made of "Kandi timari," which expression is considered as synonymous of "tubercle." In 1370, in Munich, the sale of tuberculous meat was forbidden. In 1677, twelve scholars of a Leipzig school died of tuberculosis contracted by the consumption of infected meat.

The penetration of the bacillus into the organism may take place in healthy mucous membranes. Certain predisposing influences, which were formerly considered as essential causes of tuberculosis, favor infection; such are, mainly, insufficient, watery food, which is poor in protein (malt), also narrow, poorly ventilated stables. The catarrhal affections of the respiratory mucous membrane favor the entrance of the bacillus, especially when the morbid secretions remain in the bronchi. The lacteal secretions of numerous gestations predispose also to tuberculosis by weakening the organism, rendering it less resistant to the attack of virulent elements. In breeding, predisposing a degeneration of class will also favor the invasion of the system by the tuberculous agent. Finally, there seems to be a native predisposition created by transmission of the weak constitution of the mother to the young.

Tuberculosis is the most common disease of the bovine species. It is found in nearly all countries, especially in the neighborhood of cities. The proportion of tuberculous bovines varies according to the countries. In Bavaria during 1877-78 it was 1 to 2 per 1000. There are districts where it is more frequent. In the Hollandish breed the proportion of tuberculous animals is said to reach 50 per cent (Nathusius). In Holland, 20 per cent. In some provinces of Prussia, viz., Hohenzollern and Pomerania, 50 to 60 per cent.

The general prevalence of this disease is not realized, the reason being that no general statistics of this nature have ever been gathered in the United States. In Europe accurate records are kept. In northern Europe records show 55 per cent of the cattle tuberculous. In Mexico, 38 per cent of the cattle have the disease. In Massachusetts, 28 per cent of the slaughtered cattle are affected; in New York, 11 per cent; and in other Eastern States an average of 18 per cent; the whole of the United States being estimated at 20 per cent.

When we contrast tuberculosis with other diseases that are even more dreaded, we may see how formidable an enemy we have. Typhoid and scarlet fevers are responsible for about 2 per cent of the deaths; diphtheria and pneumonia, less than 5 per cent, and smallpox is scarcely to be considered; while deaths from tuberculosis amount to almost 20 per cent of the death-rate, and it is estimated that one third of all the deaths occurring in the medical wards of the hospitals are due to tuberculosis, and that one fifth of all surgical cases treated are tubercular.

It is only a few years ago that consumption was recognized as a contagious disease, and the factor of predisposition, as determined by heredity, was considered paramount. A person in robust health may be placed in contact with the germs of tuberculosis and throw them off; and nearly every one is at one time or another susceptible, and escapes or becomes a victim accordingly as he is free from or exposed to contagious influences. A mother and her babe, for instance, may die of consumption, and heredity is blamed. But does the child inherit the bacilli, or imbibe them in the milk (where they are repeatedly found); or are they inhaled as the mother bends over the child and smothers it with kisses? Again, brothers and sisters drop off one after another, and it is said that consumption runs in the family. But we would seek another explanation if the deaths were due to scarlet fever. If you find the tubercle bacilli in the dust on the window casings, in the carpets, bedding, wall-paper, etc., of the dwellings inhabited by persons suffering from consumption, is it not rational to suppose that to these are due the successive deaths of the occupants?

It is known *positively* that tuberculosis is infectious and contagious, and, therefore, a preventable disease. The bacilli are thrown out with the sputum, and this when dried and pulverized may contaminate the air and affect other individuals. Bacilli in sputum retain their virulence, under ordinary circumstances, when expectorated on streets, sidewalks, etc., for from eight to forty-eight hours. To prevent infection all sputum should be burned. This can be done by quarantine. Tuberculosis, affecting practically all of the lower animals, is the same as in man, and is transmissible one to the other. This fact is of the greatest importance from a sanitary point of view, for we have in particular to consider the suitability of the milk and flesh of tuberculous animals for human food.

Every dairy animal in the State should be submitted to the tuberculin test, and every reacting animal should be marked with the recognized "condemned" brand. A State law should make it a felony to milk any such condemned animal; thus we would protect infants and invalids, who are more directly susceptible to tuberculosis. Every abattoir and slaughter-house should be under the inspection of a competent sanitarian, who should inspect all meats thoroughly, and that which is unfit for human consumption should be destroyed.

The prevalence of tuberculosis in animals is not realized by the majority of people. Statistics show that from 2 to 18 per cent of all cattle examined by various boards of health were tuberculous; from 2 to 4 per cent of the hogs; 1 per cent of horses; and 3 per cent of dogs. It is quite common in cats, also in chickens and other fowl; but is somewhat rare in sheep—two tenths of one per cent.

It is known that tuberculosis can be transmitted by the consumption

of the flesh of tuberculous animals and by the use of tuberculous milk and its products, butter, cheese, etc. Such meat and milk are sold every day for human food. This can be prevented, and proper measures should be taken to do so.

It is eminently necessary that our farmers and dairymen should understand that this disease is in their midst, and probably increasing here as rapidly as elsewhere. A disease of this sort can be easily mastered in the beginning, and from an economic standpoint the necessity of dealing with the subject by the tuberculin test and isolation of some sort should not be overlooked. But if they shut their eyes to the condition of things, and are willing to let the matter run on year after year without recognition or attempt to crush it out, they may expect beyond question that the problem will increase in seriousness, resulting not alone in great monetary loss to themselves, but also in the transmission of a most malignant scourge to innocent human beings.

#### SPLENETIC, OR TEXAS, FEVER.

A disease which causes much heavier direct losses than pleuro-pneumonia, and which is almost equally feared by cattle-owners, is known by the local name of Texas, or Spanish, fever. This disease, which has numerous popular and local names, has more recently been called by different writers splenetic fever, southern fever, and tick fever.

When investigations of this disease were first entered upon by the United States Department of Agriculture there were the most profound ignorance and skepticism in regard to its nature and even its existence. Cattle-owners in the Southwest and Middlewest asserted that the herds from the Gulf coast of Texas carried with them a poison that destroyed nearly all the cattle with which they came in contact. So virulent was this poison declared to be that cattle which were simply driven across the trail of the Gulf-coast herds, thirty, sixty, or even ninety days after they had passed, would still contract the disease in the same proportion and in as fatal a form as if they mingled directly with the Southern animals. To these assertions were added others to the effect that the Gulf-coast cattle were healthy, and that the susceptible cattle to which they were said to have conveyed a disease which they themselves did not have were, even when fatally affected, unable to transmit the malady or disseminate the virus to any other cattle.

A few observations of a similar nature had been made in the Eastern States. Cattle from North Carolina and South Carolina, though apparently in good health, had caused outbreaks of disease among the cattle of Virginia, Maryland, and Pennsylvania, which had mingled with them or grazed along the roads over which the Carolina animals had been driven.

The general features of this disease, as described by the various observers, were so unusual, so entirely different from what were seen in any other known communicable malady, that the correctness of the observations was not generally accepted by scientific men, and perhaps the majority of stockmen were of the opinion that the malady was the result of some local conditions, and was incorrectly attributed to poison disseminated by the Southern cattle. The cattle-raisers of Texas were indignant at the charge brought against their herds, which they

asserted were as healthy as any in the world, and, not having a disease, could not convey one.

The allegations and discussions in regard to this mysterious disease were almost forgotten, when, in 1867 and 1868, the herds of the Gulf coast had recovered from the destructive effects of the war and appeared upon the markets and feeding-grounds of the Northern States in great numbers. With the warm weather of summer there appeared a remarkably acute and fatal disease among the native cattle in the sections where the Southern animals had been grazed and marketed, which threatened the utter destruction of the native herds, and even of the milch cows kept in the vicinity of the stockyards of the principal market cities.

These serious and widespread losses demonstrated conclusively the reality of the disease, while careful observations and elaborate reports made by Professor Gamgee for the Department of Agriculture, and by the boards of health of New York and Illinois, served to collate and record all that was then known of the symptoms, mode of transmission, the general characteristics, and the changes found in the several organs upon post-mortem examination.

The problem presented to the country was a most important one. There were millions of cattle in Texas, Louisiana, and Mississippi seeking a market, and other millions of cattle in the more Northern States liable to destruction by this fatal infection which they carried. The ranges of the West and Northwest needed these Southern animals to consume their grass, and vast herds were driven through Kansas and Colorado, Nebraska and Wyoming to the most northern limits of our territory. The owners of cattle along these trails were heavy losers from disease, and hence there was an effort to confine these infectious herds to narrow trails, or even to close the trails entirely. This action was resented by the Southern men, who still were not convinced that their cattle caused disease, and who looked upon these restrictions as efforts to avoid competition and prevent the marketing of the herds from the prolific ranges of the South. The time had come when it was necessary for the Federal Government to assist both parties. It was essential to protect the Northern herds from destruction, and scarcely less important to provide for the marketing of the Southern cattle.

Another danger threatened the cattle industry in connection with this disease. Our export trade in live cattle, which was giving an important outlet for our surplus stock, was looked upon by foreign governments with suspicion. It was feared that Texas fever might be introduced among the cattle of Europe and added to the numerous plagues that they had struggled with from time immemorial. The limitation to the spread of the disease, due to the failure of the sick animals to transmit the infection, and the eradication of the disease in newly infected districts by the frosts of winter, were characteristics so unusual that they were not accepted as correct. As a great cattle-producing nation, we could not afford to allow the foreign markets to be closed against us. The Texas fever question was, consequently, one of the most momentous ones which confronted the Bureau of Animal Industry at the time of its organization.

The first step toward the control of this disease was evidently to ascertain the exact extent of the district from which cattle carried infection. To determine this, three classes of facts were available:

First, the history of the cattle which had caused outbreaks of disease could be traced, and it could be learned where they originated; second, by diligent inquiry many sections could be discovered where cattle taken from the North were affected with the disease called "acclimation fever," a disease which we had found was identical with Texas fever; and, third, it could be determined by observation and experiment whether the cattle of any particular section were susceptible to the disease, and if they contracted Texas fever upon exposure to cattle from the known infected district, that fact was evidence that the district in which they were raised was not infected. By a diligent collation and study of such facts the border line of the infected district was traced from the Atlantic coast in Virginia to the Pacific coast in the vicinity of San Francisco, a distance, allowing for the departures from a direct course, of about 4,000 miles.

The scientific study of the disease had not been neglected, and it was found that the infectious cattle could be shipped to market without endangering other animals, provided separate pens were set apart for them at the stockyards where they were unloaded, and provided the cars in which they were shipped were properly cleaned and disinfected. The settling of the Western States and the construction of railroads led to the marketing of cattle from the infected district without much driving, and the trail was gradually abandoned except during the winter months.

The regulations of the Bureau of Animal Industry hastened this solution of the difficulty. The border line of the infected district was made a quarantine line. No cattle were permitted to cross this line between February 15th and November 15th, except for immediate slaughter. The cars carrying such cattle and the waybills accompanying them were marked to show the origin of the stock, and when the destination was reached the animals were unloaded into quarantine pens and the cars were disinfected under the supervision of an inspector. From November 15th to February 15th (changed to January 15th for 1898) the movement of cattle was allowed without restriction. By these comparatively simple measures the dissemination of the disease was almost entirely prevented, and the cars and stockyards used for Northern and export cattle were kept free from the contagion.

In this manner the most urgent problems in connection with the disease were solved, but others of great economic importance still remained. Buyers took advantage of the fact that the Southern cattle must be sold for immediate slaughter, and would not pay as much for cattle in the quarantine pens as they would for the same class of stock in the free pens. Hence, the regulations were more or less of a hardship to those who produced cattle within the infected district. Again, cattle taken from the Northern States to the infected district for breeding purposes and to improve the native stock were subject to the disease, and from 75 to 100 per cent would die the first year. This was very discouraging to the breeders of that section, who desired to produce the most improved varieties of cattle, but who were prevented from doing so by the presence of this infection.

The peculiarities of Texas fever made it a most difficult disease to investigate, and it seemed at times as though its mysteries could never be fathomed. By diligent and persevering observations the Pathological Division discovered in the blood of diseased animals a microscopic



animal parasite which lives within and destroys the red-blood corpuscles, and is evidently responsible for the causation of the malady.

It was also discovered that the Southern cattle tick (*Boophilis bovis*) carried this micro-organism from the infectious cattle of the South to the Northern susceptible animals, and that when free from the tick the Southern cattle were harmless.

The actual cause producing this disease in susceptible cattle is a very minute parasite or one-celled micro-organism (*Pyrosoma bigeminum*), which inhabits the red-blood corpuscle.

In an acute attack of this disease a large portion of the blood corpuscles will be destroyed within two or three days; and it is this rapid destruction of corpuscles which accounts for the condition of the liver and spleen, and the thin, watery condition of the blood so noticeable on post-mortem examinations.

*Symptoms:* The acute form of Texas fever is that seen chiefly in the hot summer months. It appears suddenly, and where it attacks a herd of susceptible animals, they all become affected almost simultaneously. If the temperature be taken by the clinical thermometer, it will be found that the fever precedes the outward symptoms by several days. The animal becomes sluggish, stupid, depressed, the head drops, the ears are down, the animal gradually getting weaker as the disease advances. The brain symptoms, when present, are manifested by partial loss of vision, delirium, staggering gait, etc. Trembling of the muscles may be observed, especially of the hind quarters, when the animal is standing. Torpidity of the bowels is, as a rule, present during the fever. Hæmoglobinuria, or "bloody urine," may be said to be present in most acute fatal cases of Texas fever. Thinness of the blood is another characteristic of the disease.

The duration of the disease varies more or less, but the continuous high fever rarely lasts longer than eight or ten days. In those animals which recover, the falling of the temperature marks the end of the destruction of red-blood corpuscles.

The most prominent changes to be found on post-mortem is the thin, watery condition of the blood; the enlarged spleen or melt, which in acute cases is from three to four times its normal size; the gall bladder is generally full; the urine in the bladder is of a red, bloody color; and the hard, impacted condition of the stomach.

There are several species of tick, but *Boophilis bovis* is the most abundant, and aside from its importance in conveying this disease, it becomes so numerous in some States as to prove a pest to livestock.

This species must not be confused with what is commonly known as the "dog" or "wood" tick (*Dermocenter americanus*), which is found in both Northern and Southern States, and may be found in localities where the cattle tick is common.

A very common tick in Southern States is the Lone Star tick (*Amblyoma unipunctata*), characterized by a white spot just back of the head.

Another tick, spoken of also as a "wood tick," is found in this State (*Dermocenter occidentalis*), and resembles the cattle tick, but is more active in movement (when picked from the animal, and allowed to crawl on a table, etc.), and has a much heavier, thicker leg, and a larger head than the cattle tick.

In a bulletin issued by the Bureau of Animal Industry in 1893, it

was shown that the cattle tick is the sole transmitter of Texas fever, and that when Southern cattle had been completely freed from ticks they might be brought into the non-infected territory without danger of communicating the disease to the Northern cattle. The same bulletin suggested a means to free the cattle from ticks, namely, to pass them through a disinfecting bath, or, as it is now termed, to dip them.

The first dipping vat to be built in this country was constructed by R. J. Kleberg, manager of the Santa Gertrudes ranch in Nueces County, Texas, who used it for treating his stock for mange and itch. For this purpose the cattle were dipped in a strong solution of carbolic acid, and it was soon noticed that a large number of the ticks which infested the cattle became severely affected by the dip. Mr. Kleberg then placed his dipping vat and also his ticky cattle at the disposal of the Bureau of Animal Industry, and during the following five years, with the object of testing the tick-destroying properties of various disinfecting preparations, there were dipped at this ranch more than twenty-five thousand cattle. The important fact was learned during these experiments that the ticks were better able to resist these preparations than the cattle. As an instance showing the resistance of the tick to strong disinfectants, it may be mentioned that a solution of corrosive sublimate in water (1 to 250) does not in the least affect the tick when left in it for several minutes. The same is true of carbolic acid, arsenic, lime and sulphur, and a great many proprietary sheep dips.

Dr. M. Francis, of the Texas Agricultural Experiment Station, was the first to suggest the use of an oil dip. Common experience teaches that any kind of grease or oil will destroy the ticks when applied to cattle infested with these parasites. A layer of two or three inches of cotton-seed oil was floated on water, which filled the vat to a depth of about five feet. When the cattle were immersed in such a bath they would, as a rule, come out well covered with oil; but it was soon found that many ticks survived the dipping, even when 10 to 15 per cent of crude carbolic acid was added to the oil.

About the middle of 1897 great interest was being taken in the dipping question in various States, and stockmen everywhere began to realize that it would be of immense economic importance if a satisfactory dip could be discovered.

The results previously obtained indicated that a light mineral oil would be most likely to have the desired effect on the ticks, and hence experiments were inaugurated at Fort Worth in order to test some of the so-called paraffin lubricating oils. These oils, which are derived from crude petroleum after the more volatile substances, as benzine, gasoline, and kerosene, have been distilled over, were used in a layer varying in depth from a few inches to one foot on water in the dipping vat, and it was found that their effect was superior to anything which had hitherto been tried. It was observed that the vegetable oils, as well as the crude mineral oil, had merely a mechanical effect, in that they close up the pores of the skin of the parasites; the paraffin oil had in addition a decided chemical action.

While the experiments with paraffin oil were very encouraging, a small number of ticks survived, however; and, the weather being extremely warm, the oil had a more severe effect on the cattle than had hitherto been experienced. For these reasons the experiments could not be considered an unqualified success.

In the meantime experiments are being continued in order to determine if the dipping fluid can be modified so as to reduce the injury to the stock without vitiating its tick-destroying properties.

Prior to 1899 the entire State of California was, on account of this disease, south of and below a quarantine line established by the Bureau of Animal Industry, U. S. Department of Agriculture. In 1899, by the establishment of a State quarantine line, and proper regulations for maintenance of same, one half of the State was reclaimed; and in 1901, thirteen additional counties were reclaimed from the Federal restrictions.

Every endeavor is being made to ascertain, quarantine, and, by the strictest sanitary regulations, eradicate such infection as exists in this State. By reclaiming territory as fast as we can, we ultimately hope to see the entire State free from restrictions.

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Since I have been in the position of State Veterinarian it has been my endeavor to effect the organization of a State Livestock Association. Such an organization would be of great benefit to stock-owners of every section.

In view of the conditions which have surrounded the livestock men of California in the past, and in view of present conditions and future promise, I believe that by effecting such an organization, and by concerted effort, much could be done to advance the livestock interests of this State; to promote the rearing and breeding of a higher class of animals; to prevent the spread of contagious and infectious diseases; to meet the conditions presented by a drought such as we experienced in 1898; to open up and develop foreign markets for breeding-stock and animals for slaughter; and to protect their interests from thieves and wild beasts.

A large portion of the dairy products used by our people are purchased from our sister States, and hogs are shipped to the San Francisco market from the Missouri River country. The grade of stock bred in California is not as high as that in some of the Eastern States, notwithstanding the conditions here are unequalled for the breeding of most excellent animals. The half-bred native sires so frequently used in this State should be replaced by sires of individual excellence.

The scientific feeding of cattle in this State is undeveloped; the economic conditions which prevail in the East have not been adopted by our people; and there is not the proper coöperation between the livestock breeder and the sanitary officer, which experience has shown to be absolutely necessary to eradicate and prevent the spread of the diseases of animals. The good results obtained by the coöperation and organization of the breeders in other States should teach us the wisdom of so doing. I believe that the livestock industry in California would be materially benefited, and the interests of the individual breeder substantially subserved by such a State organization; for, having members and representatives in every part of the State, information as to the existing conditions could be properly received and distributed, and, being an organized body, it would at all times be ready to act for the protection of its members or to further their interests.

## FARMING IN SOUTHERN CALIFORNIA.

FURNISHED BY THE "LOS ANGELES DAILY TIMES."

Regarding the soil of Southern California, it may be said that the arable land of the southern counties is found principally in the mountain valleys and coast plains, giving a variety of soil and climatic conditions unusual in a limited territory. The soil ranges in texture from the black alluvium of the swales and peat lands to the light loams of the upland valleys; in thickness from the silt-filled depths of prehistoric gorges to the shallows of the new-made soils of mountain debris; in quality from the cold, sub-irrigated lowlands to the warm, friable ground of the mesas. The climatic conditions incident to change of altitude and the influence of the sea are little less diversified, but always salubrious and healthful, giving the country a versatility of products and advantages to life unsurpassed by any other country in the world. In this range are sections adapted to the tenderest exotics and the hardiest of fruits and flowers. In some specially-favored sections apples of the pine are grown in open air in quality equal to those of the tropics, and the apples of commerce are raised in the elevated valleys, under conditions of the frost and sunshine of their natural habitat. Between these extremes are found soil and climate filling the requirements of almost all the kinds and varieties of grains and fruits cultivated in the civilized world. Warm, alluvial valleys produce citrus fruits by tens of thousands of carloads; coast plains and mountain meadows grow barley, wheat, and hay in tens of millions of tons; cereals, fruits, field vegetables, sugar-beets, and nuts flourish all over the land, and even the rugged cañons give out their lumber, game, gold and honey as their offering to the products of this favored southern land,

### WATER CREATES WEALTH.

But with all its versatility of soil and situation it would be a weary waste without the arteries of living water that submerge the fertile soil when the rainfall is withheld, or the land is to be furnished with the elements of a succession of crops in one season. In the development of water and its economic application this section of California has become an example to the arid world. The production of the great variety of fruits and grains to which Southern California is adapted justifies the expenditure of vast sums of money, the use of the highest degree of skill, and the anticipation of steady progress in the establishment of irrigating plants. Public canals, conduits, reservoirs, and distributive pipe-lines have been constructed at an expense of millions of dollars; artesian supplies opened, and underground lakes drawn upon to reinforce the

surface waters; farms in thousands ramified with appliances for economic irrigation, all necessary to support the products, built without pattern or precedent, and with unexampled success.

In The Times annual last year much information was published upon the water developments of 1900. This work was distributed throughout the entire fruit-growing territory of the southern counties, resulting in the addition of thousands of inches to the permanent water supplies of the country. During the past year the operations have been less general, but far more extensive. On account of the abundance of surface water, the developments have been confined to territories not under irrigation, and it is within the truth to say that one enterprise put into working order last July has doubled the irrigation supplies of Southern California. This is the chief of the creations of 1901, and reclaims an immense tract near the Mexican line, bringing into immediate cultivation 100,000 acres of fine soil in the Colorado River delta. The reclamation of this fertile tract promises alfalfa for the domestic and Territorial trade, early fruits, vegetables, and sugar-beets in large quantities.

Indio is another section that has made phenomenal progress in the discovery and application of water-supplies during the last year. Here a great artesian belt has been tapped by hundreds of wells, every acre of land within its influence preempted and followed by the planting of crops. Last season a large crop of cantaloupes, melons, and other fruits was grown at Indio. The cultivation of cantaloupes began last year, but this spring hundreds of acres will be planted and the fruit ripened before the earliest melons in other States are in the vining stage. The discovery of artesian water at Indio, and the advent of the Imperial Canal have given a great field for the small farmers to bring into productiveness.

Glendora is another town that has made great improvement in its water service during the year, bringing under profitable use a large tract of new lands, and drawing general attention to that locality as a fruit-producing center.

In looking over the field of land reclamation, and the betterment of existing conditions, it will be seen that Southern California has made more rapid progress during the past twelve months than any other portion of the United States, having added to its arable lands a territory large enough for a county, and a flow of water on which it is proposed to float to market the products of the new lands. In every locality improvements have been made in irrigating appliances, giving to the southern counties added supplies and productive force. They may now claim the most expensive and complete irrigation works in the United States.

#### CEREALS AND HAY.

Southern California is not devoted entirely to the production of fruits, although its fame in this line has largely overshadowed that of other products. Along the coast plains and among the mountain valleys a large acreage is planted every year to wheat, barley, and other grains, and bountiful harvests result in ordinary seasons. Last year a larger area than usual was sown to these cereals, the cultivation of which has become more profitable through the use of improved machinery. While

the acreage was larger than that of previous years, wheat fell about 35 per cent short of the average per acre, barley 30 per cent, oats 20 per cent, and corn 40 per cent. With this deficiency the amount of cereals produced in the counties of Santa Barbara, Ventura, Los Angeles, San Bernardino, Riverside, Orange, and San Diego—counties popularly supposed to be covered exclusively with fruit orchards—is remarkable.

The barley crop of 1901 was 1,375,000 centals, of which about 650,000 centals are stored to supply forage till the new crop comes in. The popularity of barley for stock feed is increasing so rapidly that the demand is already in advance of the supply. Los Angeles dealers are delivering, on contract with the Government, 4,000 tons to Forts Wingate, Grant, Apache, Huachuca, and other stations, and barley-growers find a ready market for their grain as far east as Kansas, Colorado, and Texas. The larger portion of the barley crop is consumed locally, but the exports are heavy, and add materially to the wealth of this country.

One million centals of wheat is the record of last year's crop. The scarcity of cereals in Mexico induced that republic to remove the duties on wheat, the order expiring January 1st. This caused the exportation of 225,000 centals of wheat from Southern California to Mexican points since last summer's harvest. Of the total crop produced last year in the seven southern counties of California, 500,000 centals are on hand. With the exception of the small tonnage of wheat exported to Territorial points, and the shipments to Mexico, the local flour trade will require all this in addition to the 300,000 centals brought by the milling companies from Northern California and Kansas to blend with domestic wheat in the production of certain brands of flour, leaving practically 1,000,000 centals of wheat for home consumption. At the beginning of this year Los Angeles City will have a milling capacity of 1,000 barrels of flour per day. With machinery eight years in advance of that of other Coast mills, this city has about monopolized the home flour trade. The flouring-mills of Los Angeles have been running day and night for two years without stopping, an evidence of the popularity of their flour. It has induced other capitalists to invest in a new mill, with which addition the trade of the southwest can be supplied for some time by our home manufactories.

Southern California is developing a new farm industry—the growing of red oats. This variety is not new, but the demand for it will increase the acreage rapidly at Escondido, Oceanside, the Simi Valley, and at other points, where it has been tried. Over 75,000 sacks of these oats were sent to Texas this season for seed, the other 25,000 sacks being retained for planting in local territory.

About 125,000 centals of corn were grown upon the damp lands and coast plains last season.

One of the largest agricultural industries in Southern California is hay-growing. Over 500,000 tons of wheat, barley, and alfalfa hay were produced in 1901. Of this quantity 60,000 tons are consumed in Los Angeles, 10,000 each at Pasadena, Riverside, San Diego, and their surrounding territories. About half of the total hay output is fed by the producers, and the balance by the townspeople and fruit-growers. For three years previous to June 1, 1901, there were shipped into Southern California from the north, from Arizona, Kansas, and Colorado, about 50,000 tons per year. This season none has been required from outside points.

## THE KING OF FRUITS.

The citrus-fruit harvest of the past year reached the splendid proportions of 24,100 carloads, of which 21,173 were oranges, and the balance lemons, tangerines, and grape-fruit. An idea of the advancement of the industry may be gained from the fruit statistics of ten years ago. It is stated that the entire fruit products of California in 1890 were less than 17,000 carloads. In 1900 the citrus products had reached that figure alone. With the last orange crop exceeding by 5,000 carloads the output of fresh citrus and deciduous fruits, cured and canned fruits, raisins and wines of 1890, the progress in the cultivation of oranges may be understood.

In boxes the orange and lemon output for 1901 amounts to 8,724,200, and in pounds to 610,694,000. Ten years ago the citrus-fruit industry was in its experimental stage. The orange had been cultivated for over a hundred years, and produced in marketable quantities for more than a generation. Within the two last decades only had it been recognized as a commercial factor of great importance. Twenty years ago a new variety came into the field, which has since revolutionized fruit-growing, placing this portion of the State under a system of intensive cultivation not equaled in any other fruit-growing section of the world. The varieties of orange introduced by the discoveries of this territory were of a fair quality, prolific, and in every way adapted to the local conditions of the country. But they possess no superior merits over the fruit grown in other countries. Until the advent of the first trans-continental railroad there were no facilities for marketing, and for many years thereafter freight rates were so high, and shipping so slow and unreliable, that little of the fruit found its way into the markets of the East, and there seemed no future for the industry that is now one of the chief supports of California's prosperity.

About the year 1880 the Riverside colony began to send out a few boxes of a seedless orange that had been introduced from Brazil a few years previously. In 1883 the new orange gained universal attention in a contest at New Orleans with oranges from other portions of the world. It captured premiums for superiority after a sharp contest with competing fruit, and was adjudged the finest orange produced.

From that time dates the commercial history of the Washington Navel orange, and the rapid progress of Southern California from a fruit-growing standpoint. Immediately began the real conquest of arid California by those who had faith in the new orange. Riverside became the radiating point for the new orange groves that have since become the most prominent feature of rural life, and which have, in many localities, monopolized the land to the exclusion of most other crops. Within the past few years one or two other varieties have been introduced, which rank well with the Washington Navel in productiveness and quality, but it is to the great seedless orange from Brazil that Southern California must pay tribute for the establishment of a distinctive industry. It has given the State great profit and fame as a fruit-growing center.

In the citrus-fruit achievements of the past the southern counties of the State introduced a new era in horticulture. Never was experimentation in soil, varieties, methods of culture, and modes of marketing made with more enterprise and determination. It brought with it a period

of great development, causing the concentration of capital in local investments; the concentration of wealth in supplying the land with water and irrigating facilities; the gathering together of a rural population almost suburban in numbers and advantages of living—of everything pertaining to industrial, social, and educational order; it built towns, invited public improvement in roads, transit lines, hotels, parks, and has done more than any other line of agricultural work to make life in rural California ideal, and its institutions permanent and comprehensive of the future needs of the country.

It has been estimated that every hundred acres of bearing orange trees require the constant services of 150 workmen in growing, harvesting, and packing the products of the orchards. This means a population of at least 500 people, or one inhabitant to every two acres of citrus-fruit groves. To these may be added the artisans, laborers, tradesmen, and professional men that do not come in direct contact with the fruit business, making a population so large that it is drawing millions of dollars in public improvements of every kind, and making life in the country districts enjoyable and profitable to all classes of people.

The progress of the year in citrus-growing localities is remarkable. Tree planting has been active throughout the season. New water developments have opened new lands to the orange and lemon. Nurserymen have found sale for all the plants they could propagate. Road-makers have been busy constructing better highways, upon which to draw the tens of thousands of carloads of fruits to the shipping stations. New packing-houses have been built, better vehicles procured, and lines of improvement made wherever citrus-fruits are grown. Telegraph and telephone service has been extended to provide facilities for transacting the business of selling oranges and lemons, and other utilities established too numerous to give in detail in this article.

#### OTHER CITRUS FRUITS.

The notable progress of the past year has not been confined to the orange business. In describing the horticultural developments the lemon must not be overlooked. Hundreds of lemon groves dot the landscape in isolated sections, and large tracts are devoted to this fruit in continuous orchards. By the new process of flat-topped pruning these groves are assuming a novel appearance, always green and refreshing, with a continual round of flower and fruit throughout the year. In every section a satisfactory advance has been made in the methods of curing and packing the fruit. Enlarged company curing-houses, and an increase in individual facilities for preparing and storing lemons, are the new features of progress. Planting has not been as active in this line as it has been with oranges, for the area suitable to lemon-growing is comparatively small, and the territory is pretty well occupied. The future increase of fruit is assured, for there is no limit to the productive capacity of the orchards now in bearing. The superiority of the California lemon has been demonstrated by a dozen analytical tests and by the popular favor it has attained in all the American markets. This fruit is a staple, and will soon be supreme in every trade center in the country. During the shipping season of 1901 nearly 3,000 carloads of lemons went out from the orchards of Southern California, amounting in weight to 40,000 tons.



Some progress has been made in the introduction of Asiatic varieties of citrus fruits. The Tangierine has already become a profitable crop. Other dwarfish kinds, such as the Kumquat, Oonshiu, and citron are grown successfully. Grape-fruit is produced in large quantities, and promises well for the future.

### DECIDUOUS FRUITS.

The deciduous-fruit interests of the group of southern counties of California are important. The cultivation of the peach, apricot, prune, and other fruits of this class has proven successful, and it is only a question of superior profits that has caused the other lines of fruits to supersede, in a measure, the deciduous kinds. Southern California has been celebrated since the pioneer days for the beauty, flavor, and abundance of its pears, peaches, and grapes, and had not the soil and situation proved so well adapted to citrus fruits, this section would have maintained its prominence in the production of these fruits.

There is a large number of successful canneries in operation, and Los Angeles has an extensive establishment devoted to preserving and crystallizing fruits. At Ontario a large cannery has just been completed, and the last season witnessed many improvements in the canning facilities all over the South, the season's products being much heavier in all lines of cured and canned fruits than those of the preceding year. Since the beginning of the year there has been much progress made in the destruction of old, abandoned, or neglected deciduous orchards—the bane of every country as its age advances. These will be replaced by better varieties of fruits, the year's experience having pointed out more clearly the profitable varieties in peach, apricot, and other deciduous fruits.

In the Antelope Valley apple culture has received a decided impulse. Reports from that section show a very large area of new apple orchards, and place this portion of the State in a new light as a producer of fine fruits. Apples are grown with success in many of the mountainous portions of the southern counties, and the new year will find many new tracts of land covered with apple orchards. Last month an organization was formed for the purpose of placing the apple industry upon a better basis. It will devote its attention to a general war upon the insect enemies of this fruit, to the introduction of better methods of cultivation, and to the testing of new varieties. Great progress has been made in apple-growing, and within a few years the industry will have become second only to that of the citrus fruits.

The growing of figs, dates, early grapes, apricots, and some varieties of tropical fruits has received a great impulse in the reclamation of the warm, desert sections of Riverside and San Diego counties. Here the climate is so favorable that no section in the United States can vie with it in earliness of production. Experience has shown that dates will flourish in these warm regions, and it is not beyond the probabilities that Southern California and Arizona will soon supply the country with domestic dates. The opening and irrigation of these warm lands are giving early grapes a prominent place. They will ripen two months earlier than in most other portions of the State. The introduction of an insect that fertilizes the fig is one of the greatest achievements of horti-

cultural science. A grower at Fresno has succeeded in producing figs as typical and fine as the Asiatic fig, through the work of this imported insect, and we may now reckon this fruit as one of our staple products.

### THE OLIVE.

Olive-growing has been on the decline for several years, owing to the attacks of scale insects and to climatic causes, but great progress has been made in the last year. The present crop of olives is the largest ever grown in Southern California. One orchard at San Fernando is reported to have more fruit than the whole South produced in any previous crop. Renewed interest is noticeable in the cultivation of the olive. The past year has demonstrated that the fruit can be produced in enormous quantities. New capital is investing in the business of oil-making and in preparing for marketing the products of this tree. It is largely in its experimental stage, but this year's experience may solve the problem of what to do with the olive. It grows in great perfection here; the best varieties have been proved, and the most successful methods of cultivation established. While the crop is the most satisfactory in quality, the markets are not well defined, and altogether the cultivation of the olive may be considered yet in the light of uncertain conditions.

### GRAPES.

Southern California has made great progress in the cultivation of grapes during the past year. Large tracts in Los Angeles, Orange, and San Bernardino counties have been planted to vineyards since last January, and in no other line of fruits, except the citrus, have the developments been so extensive. Some years ago the vineyards were partially destroyed by a new vine disease. It is yet present in a few sections, but viticulturists do not hesitate to replant. At the present rate of increase this portion of the State in another year will reach its former standing as a producer of wine, table, and raisin grapes.

### SMALL FRUITS.

Southern California has made rapid progress in the cultivation of small fruits since the last annual review. The strawberry leads. New territory has been exploited, wells and reservoirs established, and hundreds of acres of strawberries planted during the past year. The finest berries in the world, perhaps, are produced in this territory. Experimentation has shown the varieties adapted to our soils and climate, thus having reached the point of profitable cultivation, and made strawberries a staple as firmly established as citrus fruits. The growing of winter berries has become a great industry.

Other small fruits are also grown abundantly for the fresh fruit markets of the Southwest, and for the local canneries. Blackberry culture has advanced by the introduction of new varieties. The Loganberry is the principal hybrid in cultivation, and many farmers are engaged in its production and profitable marketing, together with raspberries, dew-

berries, loquats, and guavas. Much progress is observable in the extension of the small-fruit fields of the section, and they add a very large revenue to the resources of the land.

### NUTS.

The English walnut is a commodity with which the world never seems to be surfeited, but a few of the southern counties are doing all they can to supply the demand. There is a steady increase in the area planted, the progress of the year being marked in the extension of this industry, where the soil is suitable for the cultivation of the nut. Last season the walnut crop of Southern California amounted to about 600 carloads, a fungous disease having reduced the yield to some extent in a few of the leading districts. Rivera, Downey, Santa Ana, Fullerton, Ventura County, and a few points in San Diego and Santa Barbara, are the walnut-growing centers of the country, Rivera and other points in the Los Nietos Valley producing nearly half of all the nuts shipped from the southern territory.

Pecans grow well in many portions of the State. We may never look for a pecan-growing craze such as is now raging in Georgia and Alabama. However, it is a nut that should receive more attention. Experiments are being made in its cultivation in several localities.

Orange County is celebrated for the extent and quality of its peanut crop. This nut—which is not a true nut—grows to perfection, and rivals its southern competitors in yield and excellence. New territory is being devoted to this prolific and profitable plant, and its growth forms an important item in the products of the land where the conditions are favorable.

The area devoted to almond-growing has decreased somewhat during the past year. This is chargeable to the tenderness of the bloom. The almond does not flourish where insect smuts and other fungi prevail, but the mountainous districts and uplands supply the conditions for producing the finest almonds grown. Portions of the Antelope Valley tablelands are peculiarly adapted to this fruit, last year's crop proving satisfactory wherever frost did not prevail. In many of the coast localities the almond orchards are disappearing entirely—another evidence that horticultural progress is abroad and engaged in weeding out the unprofitable, and substituting kinds that will pay. There is a great future for the almond in the warm upland districts, and it has been very well established in regions suitable to its profitable cultivation.

Black walnuts and filberts are grown, but are of very little commercial importance. There are a few acres of chestnuts, but this nut is not raised on a commercial scale.

### VEGETABLES.

Fields of waving celery, tracts of growing beans, acres of onions, asparagus, cantaloupes, melons, squashes, and pumpkins give a varied and attractive appearance to the lands of this section, and a diversified aspect to the landscape, that not only add beauty to the scene, but interest from a financial standpoint. Whether fruits or flowers, vegetables, nuts, or unclassified exotics, there is a novelty of some kind in

every landscape throughout this favored land. The difference is not only in appearance, but it prevails in soil characteristics and situation. The celery fields of Westminster are so swampy that the workmen and their teams are provided with broad boards upon their feet to enable them to walk over the soft ground—the most fertile soil ever placed under cultivation. In the dry lands, where winter vegetables are grown, irrigation is necessary even in the rainy season, and the ground is firm and close, under all conditions. There are extremes in every element that bear upon the production of vegetables, from the cold, watery, peat lands to the warm, dry soils upon which peas, tomatoes, and green corn are produced almost every month of the year. This versatility of climate and soil makes Southern California a famous depot for vegetables, and great are the interests that have grown up under these favorable conditions.

Winter vegetables are shipped East and sold at profitable figures, along with the hot-house products of the cities. Celery leads in importance. It is estimated that nearly 1,500 carloads of celery are raised in this locality every season, Orange County producing almost all that is grown. Cabbage and cauliflower are raised in field quantities, something over 1,000 carloads each season being the usual output. Potatoes are grown over large areas, this season proving unusually profitable for that line of agricultural crops. The varied advantages of Southern California in soil and location are applicable to the growth of vegetables as well as fruits, and the last year has witnessed a marked advancement in their cultivation, and a better understanding of the adaptability of each to the locations at hand.

The express companies have established daily refrigerator service from Los Angeles to Chicago for the sole purpose of putting asparagus, green peas, and artichokes into the market in a condition as perfect as possible. The first train left Los Angeles on Monday, March 24th, and arrived in Chicago, on Thursday, March 27th, a four days' run. Other early California vegetables will have the same service as they come into season. Green peas are in especial demand. Illustrating this, 165 crates were sold in Chicago for \$1.25 per case of four baskets.

Ventura County raises the beans of the Pacific Coast, although Orange County is developing the bean industry at a fair rate, 20,000 sacks being the output of Orange County last season. Along the coast, from Simi Valley to Santa Barbara, lies the greatest bean-growing country on the continent. The lima variety of this locality is the high-priced product of the bean fields, selling for 5 cents a pound, or 50 per cent higher than most other varieties. Thousands of acres are devoted to this crop in Ventura and Santa Barbara counties, and the only element that seems likely to reduce the acreage is the cultivation of sugar-beets. The bean crop is one of the greatest of California's special products.

#### LIVESTOCK.

The industrial condition of the ranges and stock farms has improved rapidly during the past twelve months. For several years the breeding of horses was neglected in this part of the State, sharing in the general depression of that industry all over the country. Within the year prices have advanced, and the interest in good stock has been stimu-

lated in consequence. Good roadsters, farm horses, and heavy teams are in demand at prices that insure a continued revival of the trade. Not only is the interest felt in work horses, but the organization of driving clubs and the development of local speeders have brought renewed attention to the ring. Horsemen predict higher prices for better grades of stock, and we may expect a bright future for first-class horses as the highways are improved and the people become acquainted with the superior advantages of Southern California as a location for the breeding of good horses.

The prospects of the cattle range have improved remarkably, perhaps faster during 1901 than any other branch of land industries. The herds have increased by purchase from other sections, and the pasturage of the young stock heretofore slaughtered. The business has been so prosperous that large cattle companies are forming, and several are already in the field with capital sufficient to bring cattle-raising to its former significance within the next year or so. The health of grazing stock is perfect, and with the opening of large alfalfa tracts, and the better cultivation of the farms, both grazing and cattle farming are in a satisfactory condition.

The dairy interests of this section are prospering. Better methods of feeding, improved appliances for making butter and cheese, the establishment of convenient creameries, selection of better stock, and advancement in marketing experience, have restored the dairy business, and even advanced it during the past year. We hear little about the importation of dairy products since the creameries and cheese factories have been supplied with the material from which to manufacture them. The dairy interests of this portion of the State are increasing in importance, and will soon supply the local trade.

Of the minor stock industries a revival of swine-raising is of the most importance. Better breeds are being introduced, and the question of feeding is studied with a view of improving the quality of the meat. The sheep flocks are in fine condition, and while their owners are opposed more or less by the farmers and fruit-growers, there are sections where no opposition exists. The production of wool has been generally profitable, leading to a renewed interest in the breeding of sheep and goats of a higher grade, and promising further advancement as the country develops.

#### POULTRY.

The beginning of 1902 finds Southern California less dependent upon Eastern poultry supplies than it has been since the pioneer days. A few years ago the country depended upon importations of fowl and eggs. Fruit-growing, as it is, is not conducive to chicken-raising, and for many years the demand came faster than the supplies. As the industries developed, however, it was found profitable to engage more extensively in the production of chickens to supply the needs of the growing cities and towns, and of the ranchers who could not spare the time to supply their homes—an easy matter under ordinary farming conditions.

Within the past decade great advancement has been made in this line. Through the introduction of thoroughbred stock, the holding of poultry shows, and the advent of many who did not expect to become

fruit farmers, the raising of chickens and other fowl has become popular wherever the surroundings are suitable. In many cases capital has been put into the business, making it possible to supply the trade in large quantities, and in a great measure making this end of the State self-sustaining.

Few countries have better climatic conditions for poultry-raising, or less disease to contend with in the production of fine fowl. Housing is less expensive than in other States, and winter feeding is less laborious and more profitable. With so many tourists, and city and country customers to supply, and the adaptation of this section to the business, poultry-raising will increase and become an important industry measured with some of the greater enterprises of this portion of the State. There is also great interest developing in pet stock, a greater determination to preserve the wild game of the unsettled districts, and an effort to introduce better poultry and farm stock in every line.

### THE APIARY.

The amount of honey produced in 1900 in the territory south of the Tehachapi was about 200 carloads. Bee-raising is again attracting general attention. Apiarists have found great difficulties in procuring bee colonies, the prices for stands having advanced to old-time figures, on account of the scarcity following the dry seasons. The reputation of Southern California honey is unsurpassed, the products of this portion of the Coast setting the price for the honey of the United States. With the prosperous conditions promised for the future, bee-raising is likely to become one of the most important of the minor industries of Southern California.

### BIG BIRDS.

The ostrich farm at South Pasadena is one of the popular sights of Southern California. It is not merely run as a show, but also as a profitable business enterprise, large quantities of feathers and articles manufactured from feathers being sold and shipped to all parts of the United States. There were formerly several ostrich farms in Southern California, but this is now the only one, although there are a few birds on exhibition at Coronado. There are at present about 135 birds on the farm. They are found to thrive as well in Southern California as in their native country.

There were recently imported seventeen Nubian birds, which are supposed to have the finest plumage of any of the African ostriches. They run wild, and the only way to get them is by bartering with the natives, and then only chicks can be obtained, as the old ones escape.

The proprietor of this establishment recently opened a new ostrich farm, between Nice and Monte Carlo, in the south of France, so that Southern California may now claim, among its varied industries, the exporting of ostriches to Europe.

## OUTPUT OF PRINCIPAL PRODUCTS.

The following table, showing the estimated value of leading products of Southern California in 1901, has been compiled by the Los Angeles Chamber of Commerce:

Citrus fruits.....	\$10,000,000
Gold and silver.....	6,300,000
Petroleum—estimates.....	5,600,000
Borax.....	1,214,000
Hay.....	3,000,000
Vegetables and fruit consumed.....	2,000,000
Dried fruits and raisins.....	2,000,000
Grain.....	3,000,000
Canned goods.....	1,500,000
Sugar.....	3,350,000
Fertilizers.....	360,000
Nuts.....	1,155,000
Cement, clay, and brick.....	350,000
Wine.....	330,000
Beer.....	650,000
Butter.....	675,000
Beans.....	3,500,000
Asphaltum.....	501,000
Eggs.....	500,000
Celery.....	225,000
Poultry.....	300,000
Hides.....	150,000
Fresh fish.....	275,000
Canned fish.....	105,000
Wool.....	150,000
Vegetables—exported.....	340,000
Cheese.....	150,000
Olives and olive oil.....	425,000
Salt, mineral water, and lead.....	457,000
Honey.....	275,000
Lime.....	102,000
Hogs, cattle, etc.....	2,327,000
Miscellaneous manufactured productions.....	20,000,000
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	\$71,266,000

## VITICULTURE.

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The vintage of 1901 was very satisfactory to both the vintager and the vintner. Crops having been light for the past four years, being affected by frosts and disease, the prices of grapes, both wine and table, rose to a phenomenal figure. These conditions existed all over the State.

In Sacramento County, the production of wines was about 17,250,000 gallons; of brandies, 1,250,210 gallons; the varieties of wines produced being principally port, sherry, angelica, muscat, and tokay, besides some very good grades of claret. Indeed, it is really surprising to see what a fine grade of claret is now being produced in Sacramento County, the general impression having prevailed that grapes grown in the interior counties were not capable of producing a high-grade claret. This is a fallacy, as the results of the last two vintages have proven. The ports and sherries have been particularly fine, and we may speak of Sacramento County as the banner county for the production of sherry. There is probably no other section in the State that produces as fine a quality of sherry wine as does Sacramento County.

Adverting to the prices of grapes. It would seem impossible for the wineries to pay the large sums that prevailed the last two years, and still make a profit. The prices of wines do not advance in proportion to the advance in the prices of grapes. There is a limit to what wines can sell for. That limit is guarded by a certain tariff law, which, if the prices of California wines go up too high, allows the foreign wines to enter and take the local markets.

Fortunately, the season of 1902 augurs well for a very full crop of grapes throughout the entire State. This will tend to equalize the prices of grapes, and we may look for a lower rate per ton to prevail this season; still, the prices ought to be highly satisfactory to the grower.

The season of 1902 has seen the planting of a great many acres to new vines. The phylloxera is gradually but surely extending its ravages, and resistant stock is being planted, which is the only safeguard against the destruction of vineyards by the worst disease with which the grower has to contend. The Rupestris St. George seems to be the most popular of all resistants yet found, so far as the records show. In France it has been used successfully for the past fifteen years. It is the consensus of opinion that the Rupestris St. George is about the best variety to plant in general soils.



## THE BEET-SUGAR INDUSTRY.

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For the benefit of those who may be interested in learning a few facts relative to this new and very important industry, as it stands at the beginning of 1902, the State Agricultural Society submits the following, which has been compiled with care and may be accepted as correct, except as to the figures bearing on the production for 1901, some of which are not yet obtainable, and are, therefore, approximate.

A brief review of the industry is desirable, however, for the purpose of affording a comparison with the business for 1901; and particularly as illustrating the very conspicuous position occupied by California in the efforts of the country at large to produce the sugar consumed by our people.

Prior to 1888 but very feeble efforts had been made in the production of beet sugar in the United States, although in 1838-9 beet sugar of "good quality" was made in the valley of the Connecticut, and was awarded a silver medal by the Massachusetts Charitable Mechanics Association.

In 1863-4 a beet-sugar factory was established at Chatsworth, Illinois, but it proved a losing venture, for two material reasons, apparently; the first being from lack of sufficient capital, and the second from the very low sugar content of the beets, which at that day was far less than at the present time, when, as a result of our magnificent conditions in California for raising sugar-beets, we have also succeeded in raising a sugar-beet seed which rivals the best efforts of seed-growers of Europe, in the high polarization or sugar content of the beets grown therefrom.

The first effort in the United States in a large commercial way to manufacture sugar from the beet root stands to the credit of California, and dates from 1887-8, when Claus Spreckels, with his incomparable sagacity on the general topic of sugar production, and unbounded confidence in the future of the industry in our country, built a beet-sugar factory at Watsonville, Santa Cruz County, of a capacity for working 1,200 tons of beets daily, the operations of which have become so generally known through the channels of the public press that it has for years been pointed to as an all-sufficient argument for those seeking new fields for the investment of capital.

With this undertaking began a new era for the farmer, the consumer, and the manufacturer as well. From a crop of uncertain value due to fluctuations on the boards of trade, or 'change, which often reduced the net results to the farmer to a disastrous figure, he turned to a crop—backed up by a specific contract as to price—which, with intelligent industry, at once paid a large profit, and saved many a farm from going under the hammer.

The consumer—the capricious public—at once felt the beating of the pulse of this infant Goliath, in the lowering of prices (more pounds of

sugar for a dollar), and which has steadily fought its way to public favor, until to-day at any grocery store twenty-two pounds of granulated sugar can be obtained for one dollar.

The manufacturer, he who with anchored faith and indomitable pluck, courage, and that patient perseverance which always attends the man of genius, kept steadily at his work—that of establishing in this State an independent source of its sugar supply which for all time would place it in the *front* rank as a sugar-producing State among the States of this Union.

And what is the result? From an annual output of 1,452 tons of sugar in 1888, the Watsonville factory increased its output steadily each year, as farmers learned how to raise beets profitably, until in 1896 over 19,000 tons were made. It has resulted not only in his building a beet-sugar factory near Salinas of a daily capacity of 3,000 tons of beets, the largest in the whole world, but in the building or remodeling and enlarging of six other factories in this State having a combined tonnage of 6,200 tons of beets daily.

It will be noted at once that the two factories operated by the Messrs. Spreckels, namely, that at Spreckels, Cal., with a daily capacity of 3,000 tons of beets, and that at Watsonville, with a daily capacity of 1,200 tons of beets, represent over 40 per cent of a total capacity for the State, amounting to 10,400 tons daily; which is borne out further by the following figures, showing approximately the granulated sugar output of the California beet-sugar factories for the campaign of 1901, just closed:

Spreckels Sugar Company.....	27,000 tons, or 41 per cent.
Alameda Sugar Company.....	7,500 " " 12 "
Union Sugar Company.....	3,000 " " 4 "
American Beet Sugar Company.....	18,000 " " 27 "
California and Hawaiian Sugar Refining Company	5,000 " " 7 "
Los Alamitos Beet Sugar Company.....	6,000 " " 9 "
Total .....	66,500 tons.

The average daily capacity for working beets in the factories of California, aside from those owned by the Spreckels Sugar Company, is cut down to 1,033 tons, of which three factories, with an average daily capacity of 1,233 tons, are south of the Tehachapi, and three, with an average daily capacity of 833 tons, are north of that divisional line, which is generally quoted as the boundary between Northern and Southern California efforts.

There are at the present time forty-one completed factories in the United States, classified as follows:

	Factories.	Average Daily Capacity.
Eastern States.....	2	600 tons.
Middle States.....	16	512 "
Western States.....	12	487 "
Pacific States.....	10	1,090 "
Territories.....	1	200 "

## AGRICULTURE IN CALIFORNIA.

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California, the second largest State in the Union, has a total land area of 155,980 square miles, or 99,827,200 acres, of which 28,828,951 acres, or 28.9 per cent, are included in farms.

The northern part of the State is rugged and mountainous, but contains some fertile valleys of small size. From this region two mountain ranges extend southward, one along the coast and the other along the eastern boundary. Between these two ranges lie the Sacramento and San Joaquin valleys, comprising the largest body of farming land in the State. In the south the surface becomes more even, the coast mountains almost disappearing.

The soil of the northern valleys is very rich, but the mountains are generally wooded, and suitable only for grazing purposes. The soils of the Sacramento and San Joaquin valleys vary from a sandy loam to a heavy clay, and are everywhere fertile. The southern part of the State is generally arid, but under an extensive system of irrigation the land has become exceedingly productive and valuable.

The diversity in the soil and in the climate of California renders possible a greater variety of agricultural products than is found in any other State of the Union.

Most of the farms reported in 1850 were cattle ranches operated by Mexicans under Spanish land grants. The discovery of gold in 1849, and the subsequent rapid immigration, resulted in abnormally high prices for farm produce and in a marked development of agriculture. The great increase in the area of improved farm land in the decade from 1850 to 1860 marks the real beginning of agriculture in California.

Since 1860 the number of farms has increased steadily, the rate of gain the last decade being 37.1 per cent. The total area in farms also increased rapidly, from entry on the public domain and purchase or lease of railway subsidy lands. The increase in the area of improved farm land has kept pace with the general advancement, although on account of the adoption by recent censuses of a stricter definition of the term "improved land," and the conversion of agricultural land into cattle ranches, a decrease is shown for the last decade. The average size of farms has decreased as intensive cultivation has become more general, and as special branches of agriculture have been developed.

The total value of farm property increased very rapidly until 1890, but for the succeeding decade a gain of only 3.2 per cent is shown. This small increase is doubtless due in part to the financial disturbances in 1893, and the subsequent period of depression, as the very substantial gain made in the value of farm products furnishes conclusive evidence that the agricultural interests of the State are not declining. The value

of land, improvements, and buildings increased 1.5 per cent from 1890 to 1900. The value of implements and machinery increased 45.1 per cent and that of farm products 51.3 per cent, a portion of each increase being, doubtless, the result of a more detailed enumeration in 1900 than heretofore. In the same period the value of livestock increased 11.7 per cent.

During the past decade the number of farms increased rapidly in nearly all counties. In San Francisco and Tuolumne counties the number of farms reported in 1900 was more than double that of ten years before, and in Inyo, Siskiyou, and Los Angeles counties the gains were nearly as great. Seven counties show decreases, but, with the exception of Colusa and Amador, whose losses are 43.4 and 20.0 per cent, respectively, they were all comparatively slight. The decrease in Colusa County was doubtless due to a change in boundary since 1890.

The total area of farm land in the State is 34.5 per cent greater than in 1890. In Tuolumne, San Francisco, Mono, Orange, Kern, and Inyo counties the farm area more than doubled. Of the decreases shown, the largest were for Colusa and San Bernardino counties.

The percentage of farm land improved was less than it was in 1890 in all counties except in those showing marked increases in total farm acreage, and in a few counties around the cities of San Francisco and Los Angeles. A comparison with the figures for 1890 shows a gain in the total acreage devoted to crops in nearly all counties, even in those showing the greatest decreases in improved land.

A lower value of land and buildings than in 1890 is reported for all counties except Los Angeles, Ventura, and Santa Barbara in the southwest; San Joaquin, Calaveras, and most of the counties bordering upon San Francisco Bay, in the central part; and Sierra, Plumas, Lassen, Modoc, and Siskiyou counties in the northeast. These counties are, as a rule, adapted to the growing of fruits and vegetables, while the other parts of the State are devoted, in general, to hay and forage and to livestock raising.

The value of implements and machinery has increased since 1890 in every county except Colusa, Butte, Amador, and Yuba, which show decreases of 43.7, 18.5, 14.8, and 10.7 per cent, respectively. The largest relative gains are in those counties where fruit-raising and dairying are the leading branches of agriculture.

The total value of livestock has increased 11.7 per cent, the largest relative increase being in Tuolumne County. The general agricultural progress of this county in the past ten years, which has been very marked, is probably due to its large relative increase in population.

The average expended per farm for labor was \$356 for the State, and ranged from \$67 in Mariposa County to \$1,051 in Colusa County. In the latter county \$1.11 was expended for every acre of farm land. The average was highest in San Francisco County, where it amounted to \$30.30 per acre.

The amount expended for fertilizers in 1900 was more than six times as great as it was ten years before. Large increases were shown for all counties except San Francisco and Shasta. As a rule, the counties reporting the largest acreages in fruits reported also the highest average expenditures for both labor and fertilizers.

From 1850 to 1900 the population of California increased from 92,597 to 1,485,053, or sixteenfold, while the number of farms increased from

872 to 72,542, or over eightyfold. In other words, from 1850 to 1900 the number of farms, and hence the number of persons operating them as owners or tenants, increased faster than the population. This statement applies also to the decades, 1850 to 1860, 1870 to 1880, and 1890 to 1900.

Data showing, with any exactness, the relative increases in the various classes of the farm population are available for only a portion of the fifty years covered by the foregoing comparisons. That portion is the period from 1870 to 1890, during which time the number of farms, and hence of farm owners and tenants, increased approximately 123.0 per cent, while the total State population increased but 115.6 per cent. During the same period the number of males engaged in agriculture increased from 47,580 to 126,711, a gain of 166.3 per cent, which represents approximately the rate of increase in the total number of persons living on farms; and the number of males working for wages on farms increased from 16,156 to 51,532, or 219.0 per cent. These figures show that, in the period mentioned, California was one of the few states that added more to its agricultural than to its other population. Of the different classes of farming population the gain was largest among those working for wages, although the numbers of farm owners and tenants increased faster than the total population. This increase in the number of those working for wages in California was incidental to the introduction of more intensive methods of cultivation, and to the development of such special branches of agriculture as fruit-growing, in which California now leads. The beginnings of these changes were made by the owners of the large ranches into which the entire farming area of California was originally divided.

In the last decade the number of farms, and hence, of owners and tenants, increased 37.1 per cent, while the total rural population increased but 12.7 per cent. This indicates that in the last ten years, unlike the two decades preceding, the number of persons operating farms as owners or tenants increased faster than the number of those who worked for wages. The more intensive cultivation of the soil and the growing of fruit, which were introduced between 1870 and 1890 by large capitalists who employed many hired laborers, seem now to be passing to a considerable extent into the hands of smaller farmers, who, as owners or tenants, manage and cultivate their lands in person.

#### LIVESTOCK.

The total value of all livestock on farms and ranges, June 1, 1900, was \$67,242,112. Of this amount the value of horses constituted 26.5 per cent; dairy cows, 16.0 per cent; other neat cattle, 32.6 per cent; sheep, 10.4 per cent; mules and asses, 7.1 per cent; swine, 3.7 per cent; poultry, 2.8 per cent; and all other livestock, 0.9 per cent.

No reports were received of the value of animals not on farms, but it is probable that such animals have higher average values than those on farms. Allowing the same averages, however, the total value of all livestock in the State, exclusive of poultry and bees not on farms, is approximately \$72,827,000.

NUMBER OF DOMESTIC ANIMALS, FOWLS, AND BEES ON FARMS, JUNE 1, 1900, WITH TOTAL AND AVERAGE VALUES, AND NUMBER OF DOMESTIC ANIMALS NOT ON FARMS.

LIVESTOCK.	Age, in years.	ON FARMS.			NOT ON FARMS.
		Number.	Value.	Average Value.	Number.
Calves.....	Under 1.....	329,430	\$2,796,201	\$8 49	4,478
Steers.....	1 and under 2.....	134,962	2,296,430	17 02	798
Steers.....	2 and under 3.....	109,183	2,722,506	24 94	991
Steers.....	3 and over.....	86,340	2,796,313	32 39	5,994
Bulls.....	1 and over.....	24,725	845,470	34 19	476
Heifers.....	1 and under 2.....	148,289	2,696,263	18 18	1,367
Cows kept for milk.....	2 and over.....	307,245	10,739,070	34 95	19,511
Cows and heifers not kept for milk.....	2 and over.....	304,450	7,762,893	25 50	984
Colts.....	Under 1.....	23,049	423,427	18 37	724
Horses.....	1 and under 2.....	24,639	763,613	30 99	627
Horses.....	2 and over.....	373,605	16,657,953	44 59	92,820
Mule colts.....	Under 1.....	5,035	104,787	20 81	63
Mules.....	1 and under 2.....	6,469	247,975	38 33	84
Mules.....	2 and over.....	73,269	4,258,147	58 12	3,332
Asses and burros.....	All ages.....	2,227	146,697	65 87	560
Lambs.....	Under 1.....	838,385	1,579,388	1 88	4,515
Sheep (ewes).....	1 and over.....	1,335,390	4,046,633	3 03	10,713
Sheep (rams and wethers).....	1 and over.....	389,578	1,377,210	3 54	3,003
Swine.....	All ages.....	598,336	2,476,781	4 14	24,029
Goats.....	All ages.....	109,021	262,981	2 41	3,606
Fowls:*					
Chickens†.....		3,947,200	1,877,489		
Turkeys.....		158,356			
Geese.....		28,419			
Ducks.....		62,293	363,885	2 81	
Bees (swarms of).....		129,444			
Value of all livestock.....			\$67,242,112		

\* The number reported is of fowls over 3 months old. The value is of all, old and young.

† Including Guinea fowls.

### DAIRY PRODUCE.

With respect to the number of farmers engaged in its pursuit, dairy-  
ing holds fourth place among the various branches of California agri-  
culture. Of the 72,542 farms of the State in 1900, 8,686, or 12.0 per  
cent, were dairy farms. The increase in the production of milk during  
the last decade was 42,493,555 gallons, or 38.2 per cent, although the  
population of the State increased but 22.7 per cent. The average pro-  
duction per capita for the State increased from 92.0 gallons in 1889 to  
103.5 gallons in 1899. In Yolo, Calaveras, Trinity, and Stanislaus  
counties the gains were especially marked, the production in 1899 being  
between two and three times as great as that reported for 1889. Since  
1880 the quantity of milk sold has increased 44,187,768 gallons, or over  
fourfold. These gains all support the conclusion that dairymen are not  
only keeping better cows, but devoting more care to their herds than  
they did ten years ago.

A comparison with the figures for 1890 shows a decrease of 22.1 per  
cent in the quantity of butter, and an increase of 9.8 per cent in the  
quantity of cheese, made on farms. In 1900 butter was reported by  
32,088 farmers, who produced an average of 650 pounds per farm; cheese  
was reported by 420 farmers, but the average production per farm was  
10,118 pounds.

Of the \$12,128,471 given as the value of all dairy produce in 1899, \$2,956,217, or 24.4 per cent, represents the value of dairy produce consumed on farms, and \$9,172,254, or 75.6 per cent, the amount realized from sales. Of the latter amount, \$5,847,591 was derived from the sale of 56,540,946 gallons of milk; \$2,903,714, from 15,236,667 pounds of butter; \$364,456, from 3,989,893 pounds of cheese; and \$56,493, from 71,305 gallons of cream.

#### POULTRY AND EGGS.

The total value of the products of the poultry industry in 1899 was \$6,356,746, of which amount 39.2 per cent represents the value of fowls raised and 60.8 per cent that of eggs produced. Nearly eleven million dozen more eggs were produced in 1899 than in 1889, the per cent of increase being 78.7.

#### WOOL.

The production of wool has decreased steadily since 1879. In the last decade the decrease was 2,678,052 pounds, or 16.4 per cent. The average weight per fleece, however, remaining practically the same, having been 4.8 pounds in 1889 and 4.7 pounds in 1899. Lake, Tehama, and Shasta counties reported nearly one half of the total number of fleeces of mohair and goat hair.

#### HONEY AND WAX.

The quantity of honey produced in 1899 was 3,667,738 pounds, a decrease of 262,151 pounds, or 6.7 per cent, from the production in 1889. The production in wax increased 91.5 per cent. The largest decreases in the production of honey were in the southernmost counties, where severe droughts injured the alfalfa and other food plants of the bee. There were marked increases in Fresno, Kern, and Tulare counties.

#### CEREALS.

In 1899 the total area devoted to cereals was 3,984,036 acres; in 1889 it was 3,812,751 acres; and in 1879, 2,561,800 acres. In the decade from 1889 to 1899, the acreage in oats increased 167.0 per cent; rye, 129.5 per cent; and barley, 26.2 per cent. Buckwheat shows a decrease of 40.5 per cent; corn, 23.3 per cent; and wheat, 5.5 per cent. Although the production of buckwheat, corn, and wheat decreased during the last decade, there was an increase of approximately 5 per cent in the total production of cereals. The largest acreages and quantities, and the largest average yields per acre are found along the San Joaquin and Sacramento rivers. San Joaquin County reports more barley, rye, and wheat than any other county; Sutter County, more buckwheat; and Sonoma County, more corn and oats. Nearly 85 per cent of the 420,452 bushels of Kafir corn reported, was grown in the south central counties of Fresno, Kings, Kern, and Tulare. The acreage given for cereals is exclusive of the acreage of grains cut green for hay and of the acreages of corn, non-saccharine sorghum, and similar crops grown for forage and ensilage.

## HAY AND FORAGE.

In 1900, 49,402 farmers, or 68.1 per cent of the total number, reported hay and forage crops. Excluding cornstalks and corn strippings, the average yield obtained was 1.4 tons per acre. The acreage in hay and forage in 1899 was 56.4 per cent greater than ten years before. In 1899 the acreages and yields of the various kinds of hay and forage crops were as follows: Wild, salt, or prairie grasses, 223,854 acres and 176,466 tons; millet and Hungarian grasses, 1,741 acres and 3,567 tons; alfalfa, or lucern, 298,898 acres and 838,730 tons; clover, 12,407 acres and 22,638 tons; other tame and cultivated grasses, 153,646 acres and 195,627 tons; grains cut green for hay, 1,506,360 acres and 1,714,692 tons; forage crops, 42,695 acres and 83,546 tons; cornstalks and corn strippings, 459 acres and 716 tons.

## HOPS.

The cultivation of hops in California is rapidly becoming an important industry, the quantities reported for each census year since 1860 being as follows: 1860, 80 pounds; 1870, 625,064 pounds; 1880, 1,444,077 pounds; and in 1890, 6,547,338 pounds. In 1900, 203 farmers reported an area of 6,891 acres, or an average of 33.9 acres per farm. They obtained and sold from this land in 1899, 10,124,660 pounds of hops, an average of 1,469 pounds per acre, and received therefrom \$925,319, or an average of \$4,558 per farm, \$134 per acre, and \$0.09 per pound.

The counties producing hops are mostly inland and extend from the extreme north over two thirds the length of the State. Sonoma, Mendocino, and Sacramento counties reporting 62.0 per cent of the total acreage.

## ORCHARD FRUITS.

The changes in orchard fruits since 1890 are shown in the following table:

ORCHARD TREES AND FRUITS—1890 AND 1900.

FRUITS.	NUMBER OF TREES.		BUSHELS OF FRUIT.	
	1900.	1890.	1899.	1889.
Apples .....	2,878,169	1,269,784	3,488,208	1,654,636
Apricots .....	4,244,384	1,442,749	2,547,064	970,941
Cherries .....	686,891	236,945	321,034	154,063
Peaches .....	7,472,393	2,669,843	8,563,427	1,691,019
Pears .....	2,512,890	695,738	1,912,825	577,444
Plums and prunes .....	9,823,713	1,509,833	5,632,036	1,202,573

Of the farmers of the State, 27,491, or 37.9 per cent, reported orchard fruits in 1899. The value of orchard products was not reported by the census of 1890; but in 1879 it was \$2,017,314, and in 1899, \$14,526,786, a sixfold gain in twenty years. In making comparisons between the crops of different years, however, it should be remembered that the quantity of fruit produced in any year is determined largely by the nature of the season.



The number of orchard trees increased in the last decade from 7,824,892 to 28,138,471. The most noteworthy changes were in plum and peach trees, which increased about sixfold and threefold, respectively. In 1890, 34.1 per cent of all fruit trees in the State were peach trees, and 19.3 per cent plum and prune trees, while in 1900 the corresponding percentages were 26.6 and 34.9.

Plum and prune trees are found in the greatest numbers in the west central part of the State, more than one third being in Santa Clara County. These trees increased so rapidly in the last decade that their number in 1900 was greater than the total number of orchard trees in 1890. Tuolumne is the only county in which the number of plum and prune trees has not increased since 1890.

The leading peach-growing counties are Fresno, Placer, Santa Clara, Tulare, Tehama, and Los Angeles; in 1900 they reported more than one half of all the trees. Most counties reported a much greater number in 1900 than in 1890.

In the last ten years the number of apricot trees has more than doubled. Over one third of these trees are in Santa Clara, Ventura, and Los Angeles counties.

Apple trees increased in number 126.7 per cent between 1890 and 1900. The coast counties report the largest numbers—Santa Cruz, Sonoma, Monterey, Los Angeles, Mendocino, and San Diego counties having more than one half of the total number in the State.

The adjoining counties of Solano and Sacramento contain one fifth of the pear trees in the State. Nearly three times as many were reported in 1900 as in 1890. Cherry trees, also, show a large increase, but are relatively of small importance.

In addition to the trees shown in the table above, unclassified fruit trees to the number of 520,031 were reported, with a yield of 228,176 bushels of fruit.

### SEMI-TROPICAL FRUITS.

The following table shows the changes in semi-tropical fruits since 1890:

SEMI-TROPICAL TREES AND FRUITS—1890 AND 1900.

FRUITS.	NUMBER OF TREES.		QUANTITIES OF FRUIT.		
	1900.	1890.	Unit of Measure.	1899.	1889.
Citrons .....	4,780	1,757	Boxes .....	90	-----
Figs .....	188,941	109,535	Pounds .....	10,620,366	11,190,816
Guavas .....	7,056	11,495	Pounds .....	31,370	-----
Kaki .....	2,690	19,101	Pounds .....	59,400	-----
Lemons .....	1,493,113	82,611	Boxes .....	874,305	305,598
Limes .....	311	2,007	Boxes .....	125	-----
Oranges .....	5,648,714	1,153,881	Boxes .....	5,882,193	1,245,047
Pineapples .....	*1,815	*145,000	Number .....	440	-----
Pomeloës .....	80,918	144	Boxes .....	17,851	-----
Olives .....	1,530,164	278,380	Pounds .....	5,040,227	9,659,208
Miscellaneous .....	37,957	†5,250	Pounds .....	317,330	-----

\* Number of plants.

† Banana trees.

The total number of semi-tropical fruit trees increased from 1,809,161 in 1890 to 8,996,459 in 1900. Of the number reported in 1900, 62.8

per cent were orange trees; 17.0 per cent, olive trees; 16.6 per cent, lemon trees; 2.1 per cent, fig trees; and 1.5 per cent, other trees.

The orange groves were reported chiefly by southern counties—San Bernardino, Los Angeles, Riverside, and Orange counties containing more than four fifths of the trees. In 1900 the number reported was nearly five times as great as it was in 1890. All counties reporting oranges shared in the increase, except Lake and Santa Barbara. The production showed a still greater gain.

Olives are grown chiefly in the extreme southern counties—Los Angeles, San Diego, Ventura, Riverside, and San Bernardino furnishing the greater part of the crop of 1900. The number of olive trees reported in 1900 was nearly six times that reported in 1890. Excluding Los Angeles, the counties named showed a hundredfold increase.

San Diego and Los Angeles counties report over one half of the lemon trees of the State, and show marked increases since 1890, the number reported in 1900 being over eighteen times as great as ten years before.

The fig-growing industry centers in Fresno County. Pomeloes, or grape-fruit, which in 1890 were reported in but four counties, are now grown in over one half of the counties of the State. Pineapples are found chiefly in San Diego and Riverside counties, and citrons are confined almost exclusively to Los Angeles County. The remaining fruits are of small and decreasing importance.

#### SMALL FRUITS.

The total area used in the cultivation of small fruits in 1899 was 6,353 acres, distributed among 5,137 farms. The value of the fruits grown was \$911,411, an average of \$177.42 per farm. Of the total area, 2,418 acres, or 38.1 per cent, were devoted to strawberries; the total production for the State was 7,690,830 quarts, of which more than one third was reported by Santa Cruz County. Next in importance are blackberries, of which 1,960 acres were reported. Sonoma County reported one fourth of the total production of 4,159,131 quarts.

The acreage and production of other berries were as follows: Raspberries and Logan berries, 1,039 acres and 1,446,190 quarts; currants, 729 acres and 1,031,100 quarts; gooseberries, 135 acres and 195,670 quarts; and other small fruits, 72 acres and 59,030 quarts.

#### GRAPES.

Grapes were grown in 1899 by 13,064 farmers, who obtained 7,214,334 centals of fruit from 90,686,458 vines. The total value of the grapes, including the value of raisins and of 5,492,216 gallons of wine made on farms, was \$5,622,825. Of the quantity of grapes reported, raisin grapes contributed 3,403,368 centals; wine grapes, 3,191,727 centals; and grapes for table use, 619,239 centals.

Of the fifty-seven counties in California, all but five reported grapevines, and nearly one fourth of the counties had over a million vines each.

Fresno, Sonoma, and Santa Clara are the leading counties in the cultivation of this fruit, reporting, in 1900, more than one third of the vines of the State. Fresno County alone produced 2,125,388 centals of raisin grapes, 522,529 centals of wine grapes, and 94,418 centals of grapes for table use.

Of the counties reporting large acreages in vines, the greatest number of varieties of wine grapes were grown in Sonoma, Santa Clara, Napa, Sacramento, Los Angeles, and Alameda, while grapes for table use and raisins were reported principally by the adjoining counties of Fresno, Kings, Tulare, and Madera.

#### VEGETABLES.

The value of all vegetables produced in the State in 1899, including the value of potatoes, sweet potatoes, onions, and sugar-beets, was \$7,182,318. Of this amount 36.7 per cent represents the value of potatoes, a crop reported by 9,760 farmers, who obtained an average yield of 125 bushels per acre.

Aside from the land devoted to potatoes, sweet potatoes, onions, and sugar-beets, 30,194 acres were used in the growing of miscellaneous vegetables. Of this area the products of 9,908 acres were not reported in detail. Of the remaining 20,286 acres, concerning which detailed reports were received, 4,292 acres were devoted to tomatoes; 2,368, to asparagus; 2,123, to sweet corn; 2,024, to watermelons; 1,949, to cabbages; 1,654, to celery; 1,231, to green pease; 1,209 to pumpkins; and 3,436, to other vegetables.

#### SUGAR-BEETS.

Sugar-beets were reported in California in 1880, but it was not until within the last decade that their production became an important branch of agriculture in the State. In 1899, 863 farmers devoted to this crop an area of 41,242 acres, an average of 47.8 acres per farm. They obtained and sold from this land 356,535 tons of beets, an average yield of 8.6 tons per acre, and received therefrom \$1,550,346, an average of \$1,796 per farm, \$38 per acre, and \$4.35 per ton.

These beets were grown in seventeen counties in the central and southern coast regions; the counties of Ventura, Monterey, Santa Clara, and Alameda, ranking in the order named, reported 70.6 per cent of the total acreage.

#### FLORICULTURE.

Flowers and plants were grown for market in 1899 by 280 farmers, of whom 208 derived their principal income from the sale of floral products. These commercial florists had invested a capital of \$1,280,281, of which \$766,310 represents the value of land; \$467,625, that of buildings and other improvements; \$36,881, that of implements; and \$9,465, that of livestock. They expended \$110,705 for labor and \$7,379 for fertilizers. The value of the flowers and plants grown by the commercial florists was \$511,125, and that of those grown by others, \$69,521.

#### NURSERIES.

Trees and shrubs valued at \$558,329 were grown in 1899, by 245 farmers, of whom 141 derived their principal income from the sale of nursery stock. The farms of these commercial nurserymen were worth \$1,725,945, of which \$1,515,630 represents the value of land; \$10,315, that of buildings; and \$55,243, that of implements, machinery, and livestock. The expenditure for labor was \$158,345, and for fertilizers, \$8,607.

## IRRIGATION IN CALIFORNIA.

EXTRACTS FROM U. S. CENSUS BULLETIN.

California, with its varied topography, soil, and climate, offers an interesting field for the study of irrigation. No other State produces such a variety of crops, and in no other State have agricultural lands, as such, reached the selling price of the semi-tropical fruit orchards of Southern California. Except in a few localities there is not, in California, the absolute necessity for irrigation that exists in most other western states and territories. On nearly all of the lands that are irrigated some crops will grow, in ordinary seasons, without artificial application of water. The more valuable crops, however, usually require irrigation, and with it the yield of all crops is increased greatly. An irrigation system is an insurance against crop failure in years of drought.

California has two great mountain systems, the Sierra Nevada, extending along the eastern border, and the Coast Range, following the coast line. These systems are joined in the northern part of the State in the vicinity of Mount Shasta, and in the southern part near Mount Tehachapi. Between the two ranges lie the valleys of the Sacramento and San Joaquin rivers, containing most of the agricultural lands of the State. North of the Sacramento Valley is a rugged region drained by the Klamath River. In the extreme eastern portion of the State are a few rivers which flow east into the lakes situated near the California-Nevada boundary line, while along the entire coast are streams flowing from the Coast Range into the ocean. In the southern portion of the State, also, there are several small rivers of great agricultural importance.

For convenience the following divisions—arbitrary in a measure, but conforming as far as practicable to the natural drainage basin divisions—have been adopted: Counties bordering on San Francisco Bay—Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma; counties of the north coast—Del Norte, Humboldt, and Mendocino; counties drained by Klamath River—Siskiyou, and Trinity; counties drained by Sacramento River—Amador, Butte, Colusa, El Dorado, Glenn, Lake, Lassen, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Sutter, Tehama, Yolo, and Yuba; counties drained by San Joaquin River—Calaveras, Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin, Stanislaus, Tulare, and Tuolumne; drained by Carson River—Alpine County; drained by Owens Lake—Inyo County; drained by Mono Lake and Walker River—Mono County; drained by San Benito River—San Benito County; coast counties from San Francisco Bay south, to and including Los Angeles County—Los Angeles, Monterey, San Luis Obispo, Santa Barbara, Santa Cruz, and Ventura; counties drained by Santa Ana River—Orange, Riverside, San Bernardino, and San Diego. A portion of the area of the counties included in the Sacramento River division is really

in other and smaller drainage basins, the most important of which is the Honey Lake basin.

In certain localities the necessity and value of water for particular crops, and especially for fruit, has led to extraordinary and successful efforts to obtain it from underground sources. This is particularly true of Los Angeles, Orange, Riverside, Santa Clara, San Bernardino, and Tulare counties, although in nearly every county some irrigation from wells is reported.

Water is obtained from open streams, lakes, and springs by two methods, gravity and pumping. By the gravity system, water is directed into the ditches usually by temporary or permanent dams thrown across the streams, but in some cases the bottom of the ditch is made lower at its head than the bed of the stream, thus obviating the necessity of dam building. Sometimes the stream is dammed and the water allowed to flood the contiguous lands, no ditches being used. This method is employed chiefly along the Pitt River. In the lower portions of the Sacramento and San Joaquin valleys, several thousand acres of land are moistened by water let in through headgates built in the levees which protect the reclaimed marsh lands from the river. The construction and maintenance of these intake gates and the distributing ditches involve much labor and expense, and the acreage so watered has, therefore, been included with the irrigated area.

In 1899 there were operated in California 1,913 ditches receiving water from open streams, lakes, and springs by gravity, and used chiefly or solely for irrigation purposes. The total cost of constructing these ditches was \$12,855,012 and the area in the census year was 1,248,178 acres, making the average cost of construction per acre irrigated in 1899, \$10.30. The total length of the main ditches was 5,106 miles.

Santa Clara is the only county of the first division in which irrigation is practiced to any considerable extent. The water taken from streams, which is supplied principally by Penitencia Creek, is used chiefly for orchards, and is applied during the winter season, two or three applications generally being sufficient. In the other counties of this division irrigation is used chiefly for truck farms, although in Alameda County several hundred acres of alfalfa were irrigated from Alameda Creek and other small streams.

The coast counties north of San Francisco Bay have a heavy winter rainfall, and a summer precipitation from dews and fogs. There is some irrigation for truck gardens, and on the higher lands of Mendocino County a number of farmers apply water to their alfalfa fields. There are no large canals, each irrigator usually operating a small ditch of his own.

In 1899, 53,763 acres in Siskiyou and Trinity counties were irrigated from streams, principally the tributaries of the Klamath River. Irrigation is practiced chiefly for hay and forage crops. The ditches used are generally of simple construction and comparatively inexpensive.

From the Sacramento River and its many tributaries, and from the streams flowing into Honey Lake, 241,128 acres were irrigated in 1899. Gravity ditches used solely or chiefly for irrigation supplied 185,358 acres, while a large area was watered from canals used principally for mining purposes. In the northern counties of this division, the method

of damming streams, causing them to flood the contiguous land, is often employed. Irrigation is sometimes used on the reclaimed marsh lands bordering the Sacramento River near its mouth.

The southern portion of the great interior basin of California is composed of the San Joaquin, Tulare, and Kern valleys. There are no distinct lines of demarcation between these valleys, and they are usually included in the general term "San Joaquin Valley," the San Joaquin River being the only drainage outlet to the sea. In this division 749,917 acres were irrigated in 1899, of which area 732,326 acres were supplied with water from streams, and a comparatively small acreage from ditches used principally for mining or power purposes. The owners of a number of farms which were formerly marsh lands, but are now protected from the river by levees, have successfully practiced irrigation by filling ditches with river water siphoned over the levees or let in through floodgates. In 1899 the number of ditches operated by gravity was 201, from which 724,329 acres were watered.

In Alpine, Mono, and Inyo counties, agriculture without irrigation is practically impossible, and in these counties in 1899, 104,614 acres were irrigated. The water was supplied by streams, and was conducted by ditches built for irrigation purposes.

There were six irrigation ditches in San Benito County in 1899, from which 1,868 acres were supplied with water. Alfalfa was the principal crop irrigated.

In the coast counties from San Francisco Bay south to and including Los Angeles County, the number of irrigation ditches obtaining water from streams by gravity in 1899 was 57. From these ditches 48,626 acres, principally in Los Angeles and Ventura counties, were irrigated. Water is used chiefly for orchards and for hay and forage crops.

In the three counties drained by the Santa Ana River there were, in 1899, 111,366 acres irrigated from streams by gravity ditches. In these counties, and in Los Angeles County, the water supply of several gravity systems is supplemented by water pumped from streams and wells, and in some instances by water from artesian wells. In the greater portion of California, most of the water in the rivers runs waste, but in the counties south of the San Joaquin Valley the flow of the streams is completely utilized.

In 1899, 11,780 acres in the State were irrigated with water pumped from open streams and lakes. The plants used were similar to those employed in pumping from wells. On the lower Sacramento River a barge fitted with two 15-inch rotary pumps driven by an engine of 150 horse-power, was successfully operated in irrigating the lands of its owners. The barge had a propelling wheel, and was rigged with pipes, derricks, etc., for lifting the water above the banks. This was the only floating plant reported.

Wells have an important place in the agricultural economy of California. Exclusive of the area watered from ditches whose stream supply was supplemented by water derived from underground sources, there were, in 1899, 152,566 acres irrigated from wells and tunnels. Water from streams is considered better for the soil than that from wells, as it fertilizes as well as moistens the land, while well water is sterile and often contains alkalies to a harmful degree. But, notwithstanding these admitted disadvantages, some prefer well irrigation, as the supply is certain and can be applied at the times and in the quantities desired.

Water is obtained from underground sources in three ways: By pumping from wells, by driving tunnels in the sides of hills and mountains, and by using flowing wells. Windmills are not generally employed, even the smaller plants being operated by steam, gasoline, or electricity. Many of the systems are large and expensive, and plants costing \$10,000 or more, used for single farms, are not uncommon. Repairing is an important matter in the operation of pumping plants, not only on account of the expense, but because a breakdown might occur when the water is most needed. For this reason, and because they are more efficient, centrifugal and pneumatic pumps are preferred to plunger pumps. The principal elements governing the cost of operating a pumping plant are the kind and condition of the machinery, fuel, labor, the height to which the water must be lifted and the distance it must be carried, and repairing. As a rule, the larger the plant the less the cost of water per inch, and for this reason the farmers in many localities have built coöperative plants.

The fuel generally used is oil, either crude or distillate. With the development of California's oil-fields this fuel became cheaper, making it profitable to pump water for crops. The oil industry and irrigation are mutually helpful. In 1899 the highest price reported for crude oil was paid in Tulare County—7 cents per gallon for a drum of 110 gallons. The lowest price was reported from Santa Clara County—85 cents for a barrel of 42 gallons, or a little more than 2 cents per gallon. The price of distillate varied from 9 cents in Los Angeles County to 13 cents in Yolo County; and that of gasoline, from 15 cents in Santa Clara County to 20 cents in Colusa County. Most of the pumping plants in Santa Clara County use wood for fuel. Wood costs from \$2.50 to \$8.00 per cord. One irrigator reported that he had substituted an oil engine, using \$2.10 worth of crude oil per day, for a wood-burning plant which, while consuming \$8.00 worth of fuel per day, pumped only the same quantity of water. Coal is used to some extent, and a few plants burn the branches trimmed from orchards. Most of the plants in Tulare County are operated by electricity furnished by power companies.

## CLIMATOLOGY FOR THE YEAR 1901.

BY A. G. MCADIE, SECTION DIRECTOR, SAN FRANCISCO.

*January.*—The mean temperature of the State, as determined from the records of 190 stations, was  $43.9^{\circ}$ , which was  $0.2^{\circ}$  above the normal. The highest recorded temperature was  $85^{\circ}$ , at Anaheim on the 19th, and the lowest was  $26^{\circ}$  below zero, at Boca on the 10th and Bodie on the 1st. The absolute range was  $111^{\circ}$ . The average precipitation, as determined from the records of 190 stations, was 5.21 inches, which was 0.74 inch above the normal. The greatest monthly precipitation was 24.46 inches, at Summerdale; and the least nothing, at Needles.

*February.*—The mean temperature was  $47.7^{\circ}$ , which was  $0.8^{\circ}$  above the normal. The highest recorded temperature was  $98^{\circ}$ , at Palm Springs on the 27th; and the lowest was  $26^{\circ}$  below zero, at Bodie on the 10th. The absolute range was  $124^{\circ}$ . The average precipitation was 6.03 inches, which was 2.73 inches above the normal. The greatest monthly precipitation was 22.45 inches, at Cisco, and the least 0.25 inch, at Keeler.

*March.*—The mean temperature was  $53.0^{\circ}$ , which was  $2.1^{\circ}$  above the normal. The highest recorded temperature was  $95^{\circ}$ , at Volcano on the 1st and Salton on the 6th, and the lowest was  $14^{\circ}$  below zero, at Bodie on the 13th. The absolute range was  $109^{\circ}$ . The average precipitation was 1.01 inches, which was 2.32 inches below the normal. The greatest monthly precipitation was 7.02 inches, at Crescent City, and the least nothing, at ten stations.

*April.*—The mean temperature was  $55.8^{\circ}$ , which was  $1.9^{\circ}$  below the normal. The highest recorded temperature was  $102^{\circ}$ , at Salton on the 21st, and the lowest was zero, at Bodie on the 4th and 5th. The absolute range was  $102^{\circ}$ . The average precipitation was 2.16 inches, which was 0.36 inch above the normal. The greatest monthly precipitation was 7.48 inches, at La Porte, and the least nothing, at ten stations.

*May.*—The mean temperature was  $62.0^{\circ}$ , which was  $1.7^{\circ}$  below the normal. The highest recorded temperature was  $108^{\circ}$ , at Volcano on the 16th, 17th, 18th, and 31st, and the lowest was  $16^{\circ}$ , at Bodie on the 1st. The absolute range was  $92^{\circ}$ . The average precipitation was 1.03 inches, which was 0.11 inch below the normal. The greatest monthly precipitation was 3.87 inches, at Cuyamaca, and the least nothing, at five stations.

*June.*—The mean temperature was  $70.5^{\circ}$ , which was  $0.6^{\circ}$  below the normal. The highest recorded temperature was  $124^{\circ}$ , at Salton and Volcano on the 28th, and the lowest was  $16^{\circ}$ , at Bodie on the 24th. The absolute range was  $108^{\circ}$ . The average precipitation was 0.01 inch,



which was 0.26 inch below the normal. The greatest monthly precipitation was 0.43 inch, at Sierra Madre, and the least nothing, at more than two thirds of the stations.

*July.*—The mean temperature was 76.0°, which was 0.4° below the normal. The highest recorded temperature was 121°, at Volcano on the 6th, 8th, 9th, 12th, 18th, and 19th, and the lowest was 28°, at Bodie on the 3d. The absolute range was 93°. The average precipitation was 0.01 inch, which was 0.04 inch below the normal. The greatest monthly precipitation was 0.39 inch, at Bodie, and the least nothing, at more than half of the stations.

*August.*—The mean temperature was 75.6°, or normal. The highest recorded temperature was 124°, at Salton on the 26th, and the lowest was 24°, at Bodie on the 21st. The absolute range was 100°. The average precipitation was 0.12 inch, which was 0.05 inch above the normal. The greatest monthly precipitation was 2.50 inches, at Mammoth Tank, and the least nothing, at about half the stations.

*September.*—The mean temperature was 66.0°, which was 2.3° below the normal. The highest recorded temperature was 114°, at Volcano on the 17th, and the lowest was 15°, at Bodie on the 24th. The absolute range was 99°. The average precipitation was 0.94 inch, which was 0.55 inch above the normal. The greatest monthly precipitation was 6.28 inches, at Crescent City, and the least nothing at 28 stations.

*October.*—The mean temperature was 63.2°, which was 2.4° above the normal. The highest recorded temperature was 112°, at Salton on the 19th, and the lowest was 10°, at Bodie on the 28th. The absolute range was 102°. The average precipitation was 1.50 inches, which was 0.32 inch above the normal. The greatest monthly precipitation was 5.71 inches at Auburn, and the least nothing, at six stations.

*November.*—The mean temperature was 54.9°, which was 2.5° above the normal. The highest recorded temperature was 100°, at Craftonville on the 6th, and the lowest was 5°, at Bodie on the 11th. The absolute range was 95°. The average precipitation was 2.65 inches, which was 0.46 inch above the normal. The greatest monthly precipitation was 12.85 inches, at Upper Mattole, and the least nothing, at ten stations.

*December.*—The mean temperature was 47.4°, which was 1.1° above the normal. The highest recorded temperature was 90° at Elsinore on the 18th, and the lowest was 5° below zero, at Bodie on the 13th. The absolute range was 95°. The average precipitation was 1.45 inches, which was 2.63 inches below the normal. The greatest monthly precipitation was 9.50 inches, at Crescent City, and the least nothing, at 31 stations.

*Annual.*—The highest temperature recorded in the State during the year was 124°, at Salton and Volcano June 28th, and at Salton August 26th; the lowest was 26° below zero, at Bodie January 1st and February 10th, and at Boca January 10th. The mean temperature for the State was 0.2° above the normal. The greatest monthly precipitation was 24.46 inches, at Summerdale during January.

## COMPARATIVE TABLE OF THE TEMPERATURES AND RAINFALL FOR TEN YEARS.

NOTE.—Red Bluff, located in northern extremity of the Sacramento Valley; Sacramento, central of that valley; San Francisco, representing the coast region; Fresno, central of San Joaquin Valley; Los Angeles, representing Southern California.

YEAR.	RED BLUFF.				SACRAMENTO.				FRESNO.				LOS ANGELES.				SAN FRANCISCO.			
	Temperature.			Rainfall....	Temperature.			Rainfall....	Temperature.			Rainfall....	Temperature.			Rainfall....	Temperature.			Rainfall....
	Mean.	Max.	Min.		Mean.	Max.	Min.		Mean.	Max.	Min.		Mean.	Max.	Min.		Mean.	Max.	Min.	
1891.....	deg. 62.4	deg. 114	deg. 26	ins. 23.04	deg. 60.6	deg. 106	deg. 26	ins. 15.63	deg. 63.0	deg. 114	deg. 26	ins. 8.94	deg. 63.0	deg. 109	deg. 33	deg. 56.6	deg. 100	deg. 37	ins. 21.11	
1892.....	deg. 62.2	deg. 108	deg. 28	ins. 33.48	deg. 60.2	deg. 106	deg. 26	ins. 23.60	deg. 63.1	deg. 112	deg. 27	ins. 8.75	deg. 61.6	deg. 99	deg. 33	deg. 56.0	deg. 92	deg. 38	ins. 22.08	
1893.....	deg. 60.6	deg. 106	deg. 27	ins. 24.36	deg. 58.8	deg. 103	deg. 28	ins. 16.59	deg. 61.0	deg. 109	deg. 28	ins. 9.40	deg. 61.5	deg. 92	deg. 31	deg. 54.3	deg. 90	deg. 36	ins. 17.91	
1894.....	deg. 62.0	deg. 110	deg. 27	ins. 26.98	deg. 60.3	deg. 108	deg. 26	ins. 22.61	deg. 62.6	deg. 109	deg. 25	ins. 12.48	deg. 60.3	deg. 99	deg. 32	deg. 55.1	deg. 94	deg. 36	ins. 24.32	
1895.....	deg. 62.2	deg. 108	deg. 28	ins. 22.57	deg. 60.2	deg. 102	deg. 28	ins. 17.38	deg. 62.5	deg. 110	deg. 26	ins. 10.39	deg. 61.7	deg. 100	deg. 34	deg. 55.6	deg. 89	deg. 38	ins. 17.13	
1896.....	deg. 62.5	deg. 109	deg. 26	ins. 28.46	deg. 60.7	deg. 104	deg. 28	ins. 25.06	deg. 63.7	deg. 111	deg. 28	ins. 11.02	deg. 63.1	deg. 103	deg. 35	deg. 55.9	deg. 91	deg. 33	ins. 26.25	
1897.....	deg. 62.0	deg. 109	deg. 27	ins. 20.08	deg. 59.8	deg. 105	deg. 24	ins. 15.32	deg. 62.3	deg. 110	deg. 23	ins. 8.41	deg. 61.8	deg. 97	deg. 30	deg. 55.0	deg. 92	deg. 38	ins. 16.40	
1898.....	deg. 62.5	deg. 112	deg. 24	ins. 12.91	deg. 59.5	deg. 110	deg. 26	ins. 10.04	deg. 63.1	deg. 114	deg. 24	ins. 4.99	deg. 62.5	deg. 99	deg. 31	deg. 54.6	deg. 89	deg. 36	ins. 9.31	
1899.....	deg. 62.4	deg. 109	deg. 26	ins. 28.07	deg. 59.6	deg. 102	deg. 30	ins. 21.14	deg. 62.6	deg. 111	deg. 24	ins. 10.54	deg. 62.0	deg. 100	deg. 33	deg. 55.0	deg. 94	deg. 34	ins. 23.23	
1900.....	deg. 62.4	deg. 109	deg. 29	ins. 21.77	deg. 59.9	deg. 102	deg. 30	ins. 17.91	deg. 62.8	deg. 109	deg. 26	ins. 11.06	deg. 63.5	deg. 96	deg. 37	deg. 56.2	deg. 92	deg. 40	ins. 15.33	
1901.....	deg. 63.1	deg. 111	deg. 25	ins. 25.51	deg. 60.1	deg. 105	deg. 26	ins. 18.52	deg. 63.5	deg. 110	deg. 27	ins. 8.07	deg. 62.1	deg. 97	deg. 31	deg. 55.2	deg. 91	deg. 37	ins. 19.75	

# AREA OF UNAPPROPRIATED UNITED STATES LAND IN CALIFORNIA.

Compiled by the United States General Land Office, July 1st, 1901.

	County.	AREA UNAPPROPRIATED AND UNRESERVED.			Brief description of character of unap- propriated and unreserved land.
		Surveyed.	Unsurvey'd	Total.	
Eureka.	Del Norte...	418,020	52,982	471,002	Very rough, broken, and mountainous; timber, grazing, and mineral. Mountainous; grazing and timber land; some mineral. Mountainous; timber and grazing. Mountainous; timber and grazing. Very mountainous; timber, grazing, and mineral land. Mountainous; grazing, timber, and mineral land.
	Humboldt...	452,683	94,266	546,949	
	Mendocino...	43,649	6,580	50,229	
	Shasta.....	2,480	-----	2,480	
	Siskiyou....	1,008,295	61,321	1,069,616	
	Trinity.....	989,530	45,294	1,034,824	
	Total.....	2,914,657	260,443	3,175,100	
Independence.	Alpine.....	19,114	-----	19,114	Mountainous; grazing. No vacant public land. Mountainous; agricultural, mineral. Mountainous; arid, grazing. No vacant public land. No vacant public land. Grazing, agricultural, mineral. Arid, mineral. No vacant public land. No vacant public land.
	Fresno.....	-----	-----	-----	
	Inyo.....	3,334,711	2,386,980	5,721,691	
	Kern.....	788,288	92,000	880,288	
	Madera.....	-----	-----	-----	
	Mariposa....	-----	-----	-----	
	Mono.....	1,377,003	207,600	1,584,603	
	San Bern'd'o	3,277,696	922,094	4,199,790	
	Tulare.....	-----	-----	-----	
	Tuolumne....	-----	-----	-----	
	Total.....	8,796,812	3,608,674	12,405,486	
Los Angeles.	Kern.....	196,995	16,221	213,216	Arid, level, desert, mountainous. Arid, level, desert, mountainous. Mountainous and hilly. Mountainous, rolling, level desert. Mountainous, rolling, level desert. Mountainous, rolling, level desert. Mountainous and rolling. Mountainous and rolling.
	Los Angeles	623,986	243,007	866,993	
	Orange.....	19,687	1,956	21,643	
	Riverside....	1,915,840	693,910	2,609,750	
	San Bern'd'o	2,453,425	1,113,691	3,567,116	
	San Diego....	2,725,232	599,322	3,324,554	
	Santa Barb..	135,763	33,135	168,898	
	Ventura.....	63,154	58,093	121,247	
	Total.....	8,134,082	2,759,335	10,893,417	
Marysville.	Butte.....	93,059	13,056	106,115	Grazing, mineral, and timber. Agricultural and grazing. Agricultural and grazing. Hilly; agricultural and grazing. Hilly; agricultural and grazing. Hilly; mineral and grazing. No vacant public land. Mountainous; mineral and timber. Mountainous; mineral and timber. No vacant public land. Agricultural and fruit land. Grazing and agricultural. Grazing and agricultural. Agricultural, timber, and mineral.
	Colusa.....	39,393	1,490	40,883	
	Glenn.....	81,675	960	82,635	
	Lake.....	9,239	-----	9,239	
	Napa.....	15,900	664	16,464	
	Nevada.....	11,897	11,760	23,657	
	Placer.....	-----	-----	-----	
	Plumas.....	293,313	103,240	396,553	
	Sierra.....	27,106	34,200	61,306	
	Solano.....	-----	-----	-----	
	Sutter.....	1,271	630	1,901	
	Tehama.....	78,198	4,075	82,273	
	Yolo.....	41,524	880	42,404	
	Yuba.....	62,874	-----	62,874	
	Total.....	755,349	170,955	926,304	

## AREA OF UNAPPROPRIATED UNITED STATES LAND IN CALIFORNIA—Continued.

Land District.	County.	AREA UNAPPROPRIATED AND UNRESERVED.			Brief description of character of unappropriated and unreserved land.
		Surveyed.	Unsurvey'd	Total.	
Redding.	Butte .....	2,840	-----	2,840	Mountainous land; timbered.
	Modoc .....	97,799	32,430	130,229	Mostly mountainous timber land.
	Plumas .....	2,500	-----	2,500	Mostly mountainous timber land.
	Shasta .....	849,820	39,075	888,895	Farming, grazing, timber, mineral.
	Siskiyou .....	1,020,311	167,136	1,187,447	Farming, grazing, timber, mineral.
	Tehama .....	338,775	19,398	358,173	Mostly foothill and grazing land.
	Trinity .....	377,335	8,119	385,474	Mountainous; timber, grazing, and mineral.
	Total .....	2,689,400	266,158	2,955,558	
Sacramento.	Alpine .....	91,802	96,662	188,464	Grazing, desert.
	Amador .....	93,461	12,620	106,081	Grazing, timber, mineral.
	Calaveras .....	112,509	24,280	136,789	Grazing, timber, mineral.
	Contra Costa .....	-----	-----	-----	No vacant public land.
	El Dorado .....	179,625	63,479	243,104	Timber and grazing.
	Mono .....	10,000	4,380	14,380	Grazing, mineral.
	Nevada .....	88,144	14,060	102,204	Mineral, timber.
	Placer .....	79,153	25,134	104,287	Mineral, timber, and grazing.
	Plumas .....	15,020	-----	15,020	Grazing.
	Sacramento .....	11,585	-----	11,585	Farming and grazing.
	San Joaquin .....	-----	-----	-----	No vacant public land.
	Sierra .....	194,714	32,533	227,247	Grazing and timber.
	Solano .....	2,970	-----	2,970	Agricultural.
	Sutter .....	16,498	-----	16,498	Mineral and timber.
San Francisco.	Tuolumne .....	41,537	16,390	57,927	Timber, grazing.
	Yolo .....	9,000	-----	9,000	Farming and grazing.
	Yuba .....	850	-----	850	Grazing and mineral.
	Total .....	946,868	289,538	1,236,406	
	Alameda .....	2,167	-----	2,167	Mountain land.
	Colusa .....	2,231	8,500	10,731	Mountain land.
	Contra Costa .....	-----	-----	-----	No vacant public land.
	Fresno .....	80,059	2,560	82,619	Mountain land.
	Glenn .....	114,901	-----	114,901	Mountain land.
	Kern .....	8,714	14,447	23,161	Mountain land.
	Kings .....	7,520	-----	7,520	Mountain land.
	Lake .....	384,593	-----	384,593	Mountain land.
	Marin .....	-----	-----	-----	No vacant public land.
	Mendocino .....	567,646	119,246	686,892	Mountain land.
	Merced .....	56,150	-----	56,150	Mountain land.
	Monterey .....	973,287	3,994	977,281	Mountain land.
	Napa .....	87,134	11,520	98,654	Mountain land.
	Sacramento .....	-----	-----	-----	No vacant public land.
	San Benito .....	355,477	5,115	360,592	Mountain land.
	San Fran. ....	-----	-----	-----	No vacant public land.
	San Joaquin .....	24,720	-----	24,720	Mountain land.
	S. L. Obispo .....	641,009	5,703	646,712	Mountain land.
	San Mateo .....	-----	-----	-----	No vacant public land.
	Santa Barb. ....	38,605	1,563	40,168	Mountain land.
	Santa Clara .....	28,068	5,482	33,550	Mountain land.
	Santa Cruz .....	-----	-----	-----	No vacant public land.
	Solano .....	82,412	-----	82,412	Mountain land.
	Sonoma .....	119,522	24,157	143,679	Mountain land.
	Stanislaus .....	29,781	5,737	35,518	Mountain land.
	Tehama .....	119,915	800	120,715	Mountain land.
	Trinity .....	8,680	-----	8,680	Mountain land.
	Ventura .....	25,202	-----	25,202	Mountain land.
	Yolo .....	-----	-----	-----	No vacant public land.
	Total .....	3,757,793	208,824	3,966,617	

## AREA OF UNAPPROPRIATED UNITED STATES LAND IN CALIFORNIA—Continued.

Land District	County.	AREA UNAPPROPRIATED AND UNRESERVED.			Brief description of character of unappropriated and unreserved land.
		Surveyed.	Unsurvey'd	Total.	
Stockton.	Amador .....	-----	-----	-----	No vacant public land.
	Calaveras .....	5,554	1,320	6,874	Hilly; farming, grazing, mining.
	Fresno .....	181,861	23,714	205,575	Hilly; farming, grazing, mining.
	Madera .....	250,297	11,817	262,114	Hilly; grazing, farming.
	Mariposa .....	116,868	7,014	123,882	Mountainous; mining, farming, grazing, timber.
	Merced .....	11,099	-----	11,099	Rolling foothills; farming, grazing.
	Sacramento .....	-----	-----	-----	No vacant public land.
	San Joaquin .....	241	-----	241	Farming.
	Santa Clara .....	-----	-----	-----	No vacant public land.
	Stanislaus .....	31,214	-----	31,214	Foothills; farming and grazing.
Susanville.	Tuolumne .....	126,685	15,059	141,744	Hilly, mountainous; mining, farming, grazing.
	Total .....	723,819	58,924	782,743	
	Lassen .....	2,368,179	54,753	2,422,932	Timber, desert, grazing, mineral.
	Modoc .....	1,608,689	127,615	1,736,304	Timber, desert, grazing, farming.
	Plumas .....	744,345	64,524	808,869	Mountainous; timber, mineral.
	Shasta .....	11,000	-----	11,000	Mountainous.
	Sierra .....	52,999	-----	52,999	Timber, desert, grazing, mountainous, and mineral.
	Tehama .....	3,480	7,520	11,000	Mountainous.
	Total .....	4,788,692	254,412	5,043,104	
Visalia.	Fresno .....	218,171	11,840	230,011	Mountainous; grazing, timber.
	Kern .....	202,059	56,441	258,500	Arid plains and mountainous.
	Kings .....	20,552	-----	20,552	Mountainous; arid plains.
	Madera .....	-----	-----	-----	No vacant public land.
	Merced .....	7,481	-----	7,481	Mountainous; grazing.
	Monterey .....	2,400	-----	2,400	Mountainous; grazing.
	San Benito .....	9,118	-----	9,118	Mountainous; grazing.
	S. L. Obispo .....	29,955	-----	29,955	Mountainous; grazing.
	Tulare .....	55,388	50,868	106,256	Arid plains and mountainous; timber.
	Total .....	545,124	119,149	664,273	
	Total in California	34,052,596	7,996,412	42,049,008	

## CALIFORNIA PRODUCTS.

The annual yield of some of the leading products of the State, with approximate values, for a series of years, and trade estimates for 1901, are as follows:

(From San Francisco Chamber of Commerce.)

Year.	DRIED PRUNES.		DRIED APPLES.		DRIED PEACHES.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1892 .....	22,500,000	\$1,140,000	2,750,000	\$170,000	13,500,000	\$940,000
1893 .....	52,180,000	2,000,000	3,800,000	230,000	16,800,000	1,160,000
1894 .....	44,750,000	1,700,000	5,850,000	350,000	30,540,000	2,120,000
1895 .....	64,500,000	2,800,000	4,560,000	275,000	24,500,000	1,705,000
1896 .....	55,200,000	2,400,000	2,350,000	140,000	16,460,000	1,050,000
1897 .....	97,780,000	3,750,000	5,250,000	320,000	27,150,000	1,890,000
1898 .....	90,420,000	3,600,000	3,520,000	215,000	10,960,000	765,000
1899 .....	112,827,000	3,950,000	5,900,000	358,000	34,800,000	2,430,000
1900 .....	159,460,000	4,650,000	6,360,000	390,500	34,340,000	2,260,000
1901 .....	72,000,000	2,600,000	6,000,000	350,000	21,500,000	1,500,000

Year.	DRIED APRICOTS.		DRIED PEARS.		DRIED PLUMS.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1892 .....	12,500,000	\$1,040,000	2,250,000	\$157,500	2,000,000	\$84,000
1893 .....	9,500,000	800,000	2,640,000	180,750	1,500,000	62,000
1894 .....	28,750,000	2,250,000	6,530,000	457,200	2,760,000	112,500
1895 .....	10,650,000	900,000	5,400,000	375,000	4,500,000	190,000
1896 .....	6,740,000	610,000	9,650,000	675,500	2,100,000	87,000
1897 .....	30,125,000	2,450,000	6,350,000	434,000	3,250,000	135,000
1898 .....	8,240,000	750,000	6,620,000	460,000	2,460,000	100,000
1899 .....	11,600,000	925,000	5,760,000	403,000	3,360,000	136,000
1900 .....	28,080,000	2,250,000	14,550,000	1,018,500	3,900,000	160,000
1901 .....	11,650,000	930,000	7,000,000	500,000	4,100,000	165,000

Year.	DRIED NECTARINES.		DRIED FIGS.		DRIED GRAPES.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1892 .....	720,000	\$45,000	500,000	\$25,000	4,000,000	\$120,000
1893 .....	780,000	47,500	890,000	45,000	4,880,000	145,000
1894 .....	1,250,000	75,000	1,650,000	77,500	4,610,000	135,000
1895 .....	1,325,000	80,000	2,750,000	140,000	4,250,000	125,000
1896 .....	625,000	37,500	2,165,000	108,000	2,700,000	80,000
1897 .....	285,000	17,250	3,250,000	160,000	3,450,000	103,000
1898 .....	190,000	12,000	4,780,000	240,000	640,000	19,000
1899 .....	840,000	50,500	5,800,000	280,000	450,000	13,000
1900 .....	875,000	52,500	6,000,000	300,000	480,000	14,500
1901 .....	690,000	42,000	5,600,000	285,000	400,000	14,000

## ANNUAL YIELD OF PRODUCTS OF CALIFORNIA—Continued.

Year.	HOPS.		WALNUTS.		ALMONDS.		CANNED FRUITS.
	Bales.	Pounds.	Pounds.	Value.	Pounds.	Value.	Cases.*
1892.....	39,800	7,800,000	2,950,000	\$205,000	1,066,000	\$120,000	1,602,370
1893.....	51,400	10,074,400	2,866,000	200,000	720,000	80,000	1,001,640
1894.....	67,600	13,230,000	5,805,000	420,000	2,125,000	235,000	1,528,830
1895.....	52,000	10,192,000	4,620,000	325,000	1,850,000	205,000	1,639,800
1896.....	35,000	6,860,000	8,230,000	580,000	3,210,000	356,000	1,602,450
1897.....	45,000	8,820,000	7,970,000	490,000	4,750,000	525,000	1,942,982
1898.....	44,500	8,722,000	11,300,000	795,000	900,000	100,000	2,085,166
1899.....	59,000	11,564,000	11,160,000	789,000	4,640,000	515,000	3,003,170
1900.....	36,000	7,056,000	10,860,000	775,000	5,480,000	600,000	2,775,886
1901.....	45,000	8,820,000	12,500,000	890,000	2,200,000	245,000	2,275,700

Year.	ORANGES.		LEMONS.		HONEY.	BEEF SUGAR.	RAISINS.	
	Cars.	Boxes.	Cars.	Boxes.	Pounds.	Pounds.	Pounds.	Value.
1892....	5,806	1,939,204	65	21,710	1,240,000	8,624,890	57,000,000	\$2,900,000
1893....	4,877	1,617,913	145	48,430	2,680,000	21,801,330	85,000,000	4,300,000
1894....	7,240	2,418,160	335	111,890	4,275,000	40,204,100	163,000,000	5,180,000
1895....	6,350	2,120,900	565	186,610	4,000,000	49,232,700	93,160,000	4,672,000
1896....	5,972	1,994,643	1,378	460,252	5,350,000	64,510,000	68,230,600	3,430,000
1897....	12,995	4,340,330	2,410	804,940	7,878,000	70,740,000	93,704,000	4,725,000
1898....	9,645	3,221,430	1,230	410,820	1,820,000	36,180,000	80,631,000	4,050,000
1899....	15,880	5,748,560	2,520	781,200	2,822,000	64,890,000	71,568,000	3,590,000
1900....	21,640	7,833,680	3,260	1,010,600	2,208,000	60,638,000	94,335,000	4,740,000
1901....	22,500	8,145,000	3,500	1,085,000	4,600,000	160,000,000	72,000,000	3,640,000

\* A case of canned fruit consists of 2 dozen 2½-lb. tins.

## PRODUCTS OF NORTHERN AND SOUTHERN CALIFORNIA (FROM ORCHARDS, VINEYARDS, AND GARDENS) SHIPPED OUT OF THE STATE.

	Northern California.	Southern California.
	Carsloads.	Carsloads.
Green deciduous fruits.....	9,344	23
Dried fruits.....	10,114	585
Raisins.....	4,172	160
Canned fruits.....	7,692	630
Nuts.....	190	656
Citrus fruits.....	2,088	30,298
Wine and brandy.....	8,475	129
Vegetables.....	6,375	2,798
Totals.....	48,450	35,279

From this table it will be seen that the fruit crop of Southern California is almost exclusively citrus fruits.

## FRESH FRUIT SHIPMENTS.

The number of cars of deciduous fruits forwarded by rail from California during the past seven years were as follows:

Varieties.	1895.	1896.	1897.	1898.	1899.	1900.	1901.
Pears .....	1,187	1,624	1,640	1,595	1,684	2,115	1,535
Peaches .....	1,289	976	1,316	1,103	2,625	1,361	1,901
Grapes .....	1,010	712	1,100	734	847	825	966
Plums and prunes .....	465	407	742	542	885	1,158	936
Apricots .....	162	172	177	123	90	152	201
Cherries .....	180	88	239	297	85	238	110
Apples .....	105	53	61	596	490	512	739
Quinces .....	13	8	24	1	19	10	13
Figs .....		2	3				
Nectarines .....	5	1	10		2		2
Persimmons .....			2	1	1	3	2
Mixed .....	152	9	9	15	24	27	23
Cars not reported .....					117	34	31
Totals .....	4,568	4,052	5,323	5,007	6,869	6,435	6,459

## SHIPMENTS OF VEGETABLES OUT OF STATE IN 1901.

*By Rail.* (Tons of 2,000 pounds.)

Place of Shipment.	Green Vegetables.	Canned Vegetables.
<i>Northern California.</i>		
San Francisco .....	20,442.8	555.8
Oakland .....	784.1	3,230.2
San José .....	982.1	1,432.2
Stockton .....	11,567.3	40.8
Sacramento .....	9,794.8	1,972.5
Marysville .....	339.5	
Other points not designated .....	4,591.8	
Total tons .....	48,502.4	7,231.5
Total carloads, ten tons each .....	4,850.2	723.1
<i>Southern California.</i>		
Los Angeles .....	26,397.3	231.5
Orange County .....	1,199.7	
Riverside County .....	7.9	
San Bernardino County .....	132.7	
San Diego County .....	15.0	
Total tons .....	27,752.6	231.5
Total carloads, ten tons each .....	2,775.3	23.1

*By Sea.* (Tons of 2,000 pounds.)

San Francisco .....	7,832.4	179.8
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*By Rail and By Sea.* (Carloads of ten tons each.)

Total carloads by rail .....	7,625.5	746.2
Total carloads by sea .....	783.2	17.9
Total carloads from State .....	8,408.7	764.1



CALIFORNIA WINES AND BRANDY—YEARLY PRODUCTION.

Year Ending June 30.	Wine.	Brandy.
	<i>Gallons.</i>	<i>Gallons.</i>
1889-90 .....	17,500,000	1,072,957
1890-91 .....	20,000,000	1,245,698
1891-92 .....	15,000,000	1,475,525
1892-93 .....	24,700,000	2,209,617
1893-94 .....	14,000,000	2,007,965
1894-95 .....	18,000,000	1,754,062
1895-96 .....	17,000,000	2,090,000
1896-97 .....	16,400,000	1,442,468
1897-98 .....	31,500,000	1,250,000
1898-99 .....	19,000,000	1,690,000
1899-00 .....	23,500,000	871,968
1900-01 .....	17,250,000	1,250,210

BUTTER AND CHEESE PRODUCED IN THE STATE.

Compiled by the State Dairy Bureau.

Year.	BUTTER.			CHEESE.
	Creamery Method.	Old Method.	Total.	
	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>
1896 .....	10,097,323	21,508,117	31,605,440	6,383,130
1897 .....	10,866,646	17,811,793	28,678,439	6,399,625
1898 .....	10,410,479	13,280,549	23,691,028	5,148,372
1899 .....	12,725,814	12,143,270	24,869,084	5,294,938
1900 .....	16,486,695	12,296,164	28,782,859	4,989,960
1901 .....	19,017,512	10,713,370	29,730,882	5,679,566

RECEIPTS OF DAIRY PRODUCE.

The receipts of butter, cheese, and eggs at San Francisco during 1901 were as follows:

Sources.	Butter.	Cheese.	Eggs.
	<i>lbs.</i>	<i>lbs.</i>	<i>doz.</i>
California .....	14,333,172	3,828,490	8,564,940
Oregon, etc. ....	966,100	269,260	29,970
Eastern .....	154,510	575,280	1,779,690
Totals, 1901 .....	15,453,782	4,673,030	10,374,600
Totals, 1900 .....	17,582,500	5,640,680	7,720,296
Totals, 1899 .....	13,807,300	6,092,840	7,120,654
Totals, 1898 .....	15,606,050	4,777,300	6,101,405
Totals, 1897 .....	14,634,000	6,036,420	5,442,202
Totals, 1896 .....	13,769,850	5,124,660	4,941,967
Totals, 1895 .....	14,344,300	5,257,900	4,932,204
Totals, 1894 .....	17,257,100	6,689,620	4,881,375
Totals, 1893 .....	17,037,900	6,750,000	4,715,711
Totals, 1892 .....	14,677,300	7,497,900	5,308,908
Totals, 1891 .....	12,881,950	6,637,600	5,070,668
Totals, 1890 .....	12,583,400	6,835,700	6,122,776
Totals, 1889 .....	12,123,200	5,889,000	5,836,203

## CALIFORNIA'S WHEAT CROP (INCLUDING FLOUR) FOR 9 YEARS—1891-1901.

Crop Year.	Wheat—Tons.
1892-93 .....	1,022,238
1893-94 .....	995,232
1894-95 .....	716,792
1895-96 .....	786,522
1896-97 .....	872,602
1897-98 .....	917,589
1898-99 .....	367,061
1899-00 .....	973,102
1900-01 .....	611,536

## CEREAL EXPORTS—1892-1901.

The clearances of flour and grain cargoes from San Francisco, by sea, for a series of years, are as follows:

Year.	Flour.	Wheat.	Barley.	Oats.	Corn.	Rye.
	<i>bbls.</i>	<i>ctls.</i>	<i>ctls.</i>	<i>ctls.</i>	<i>ctls.</i>	<i>ctls.</i>
1892.....	1,077,956	9,726,697	1,323,495	21,982	70,648	92,420
1893.....	872,506	10,880,219	2,817,151	19,856	95,867	33,739
1894.....	787,432	7,144,017	1,058,172	21,430	178,320	12
1895.....	949,981	11,047,414	1,622,567	16,204	46,011	-----
1896.....	1,172,733	12,182,706	3,856,394	32,312	30,351	152,437
1897.....	869,437	9,508,591	3,405,832	23,362	78,483	69,792
1898.....	831,083	3,973,536	786,303	28,308	31,633	29
1899.....	1,077,580	3,247,102	3,167,383	31,033	21,389	54,215
1900.....	1,260,202	7,752,722	2,489,826	234,613	13,002	49,240
1901.....	1,169,184	9,294,538	4,072,241	151,704	10,792	144,446

## WOOL PRODUCTION OF CALIFORNIA—1890-1901.

Compiled by CHAS. H. ABBOTT, Esq.

Year.	Pounds.
1890 .....	34,854,640
1891 .....	33,183,475
1892 .....	35,802,930
1893 .....	33,169,375
1894 .....	36,968,400
1895 .....	35,856,690
1896 .....	27,195,550
1897 .....	34,582,325
1898 .....	28,063,240
1899 .....	28,332,090
1900 .....	27,750,000
1901 .....	26,900,000

## IMPORTATIONS OF LIVESTOCK AND PACKING-HOUSE PRODUCTS.

The following statistics, furnished by the two great railway systems of this State, give the amount, in pounds, of the shipments of livestock and dairy and packing-house products into California for the fiscal year ending June 30, 1901:

### SOUTHERN PACIFIC SYSTEM.

*Statement showing Receipts of Shipments of Dairy Products, Packing-House Products, and Livestock at points on this Company's lines in California from points beyond Portland, Ogden, Mojave, Deming, and El Paso, for the fiscal year ending June 30, 1901:*

	Pounds.
Butter .....	250,780
Cheese .....	1,748,650
Condensed Milk .....	6,537,190
Eggs .....	5,065,300
Poultry .....	8,260,190
Cattle .....	12,203,800
Sheep .....	1,223,600
Hogs .....	15,007,870
Packing-house products .....	36,148,400
Total .....	86,445,780

### SANTA FE SYSTEM.

*Statement showing Receipts of Shipments of Poultry, Eggs, Butter, Cheese, Packing-House Products, Cattle, Sheep, and Hogs imported into the State of California by the Santa Fe System, for the year ending June 30, 1901:*

	Pounds.
Poultry and Eggs .....	3,835,300
Butter and Cheese .....	714,200
Packing-house products .....	12,343,900
Cattle, Sheep, Hogs, etc. ....	34,972,800
Total .....	51,866,200



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RESOURCES

OF THE

STATE OF CALIFORNIA.

(BY COUNTIES.)

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## ALAMEDA COUNTY.

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Alameda County fronts the bay of San Francisco, and lies opposite to San Francisco and the Golden Gate. It is bounded on the north by Contra Costa County, on the east by San Joaquin County, on the south by Santa Clara County, and on the west along its entire length by the bay of San Francisco. Its area is 737 square miles, or 471,680 acres.

For a distance of 36 miles, Alameda County fronts upon the bay, with an average width of 25 miles, extending to and beyond the summit of the Contra Costa Hills, comprising numerous beautiful valleys, besides the broad Alameda Valley, which last is bounded by the waters of the bay on the one side and the Contra Costa Hills on the other, and is one of the richest and most fertile valleys in the State. Among the most important of the smaller valleys are Livermore, Sunol, Castro, Amador, and Moraga, all richly endowed by nature with most productive soils, where flourish the grape, olive, fig, orange, and most of the semi-tropical fruits, and beautified with perennial flowers. The Contra Costa Hills, themselves, are well adapted to the cultivation of the olive, and the time is not far distant when the whole range of hills will be covered with these beautiful trees.

The principal stream in this county, Alameda Creek, rises in the Mount Diablo range, near Livermore Pass, and running through a cañon in the Contra Costa range, empties into San Francisco Bay, supplying water-power for several mills on the way. It is also navigable for schooners and light-draught crafts for several miles. There are several other creeks crossing the county and emptying into the bay, two of which furnish water for the city of Oakland. By the construction of a high dam at a narrow gorge in the hills, San Leandro Creek is made to form Lake Chabot, half a mile in width by 2 miles in length.

The range of hills, as has been stated, extending the whole length of the bay-front of the county, at a distance from the bay ranging from 5 to 10 miles, reach their highest altitude at Mission San José, at the southern end of the county, in Mission Peak, the highest point being 2,275 feet above tide-water. In early days these hills were covered with giant redwood trees; some of the old stumps remaining measure from 6 to 10 feet in diameter. The timber was cut away by the early pioneers, the lumber being used to build up San Francisco in the days of '49 and '50, until scarcely a redwood is found of any dimensions.

The country around Haywards was once a great grain-growing region, but its special adaptability for fine fruits is causing large tracts to be set out in orchards. Even now this district is one of the great fruit-raising regions, many millions of pounds being annually shipped.

### SOILS.

The soils of this county that are immediately along the bay in Alameda Valley and the marshes formed by the overflow, are heavy, but very fertile when reclaimed. Then comes a broad belt of rich, black

adobe. This belt is crossed by sedimentary deposits of alluvial land made by shifting channels of streams running down from the Coast Range. In the Niles region are lighter loams. About Livermore are uplands, bench and valley lands. Between the latter two classes the difference in potash, lime, and phosphoric acid accounts for difference in grape crop.

Mission San José is characterized by gravelly, upland, adobe soil, and was evidently chosen by the padres of the old mission for its exemption from frost, caused by its slight elevation above the surrounding valleys.

At Pleasanton the section tributary consists of agricultural and grazing lands. The soil is very rich sediment bottom, producing hay, grain, potatoes, hops, and beets in abundance.

At Alvarado the surrounding country is a fine farming and fruit region, and gardening and dairying are also largely carried on. The fertile, alluvial soil of the country about is finely adapted to fruit-growing.

### CLIMATE.

The climate of Alameda County is unsurpassed for equability and salubrity, never reaching the extremes of heat or cold, the nights being always cool. Bordering on the bay, the county is subject to frequent fogs during the spring months, but these are not usually dense or of long duration. It is sheltered from the chilly winds of the ocean by the peninsula of San Francisco and the intervening bay.

The average temperature of Alameda County ranges about 52° in winter and 67° in summer; while in some of the cozy valleys the average is still more favorable. The county lies in about the same latitude as New York City, the average of which is 71° in summer and 31° in winter. In the immediate vicinity of Mission San José, in this county, embracing a territory 2 miles in width and 12 miles in length, the variation of temperature is less than in any other section of California; it is in every sense of the word a semi-tropical belt, where frosts are not known, and where even tropical fruits and plants grow and thrive.

### FRUIT CULTURE.

Alameda County was among the first in the State to begin the planting of orchards and vineyards, but it called for a great deal of experiment to determine to what particular fruits the different sections were best adapted; after forty years of trial those questions are now pretty well settled. As all Gaul was divided into three parts, so this county is divisible into three sections—the cherry district, the apricot district, and the vineyard district.

From Oakland to Haywards is the home of the cherry; nowhere on the Pacific Coast does this fruit grow to greater perfection, and of the many hundred acres devoted to it, a majority have been very profitable, excepting of course in years like the last one, when frosts and untimely rains stripped the trees of blossoms and young fruit, causing an almost total failure. Disasters like this do not often occur, and in an ordinary year the cherry crop is good for a profit of a quarter of a million dollars. There have been some failures due to other causes, such as the selection



of poor varieties and low prices, but during the last five years there has been no time when Royal Ann cherries, the favorite canning variety, did not command five cents a pound, and that means a good profit.

The apricot section of Alameda County includes all the region east and south of Haywards, but the center of the business is at Niles, and this region is as favorable for apricots as the San Leandro region is for cherries. While the apricot is grown in nearly all fruit-producing regions of California, there are few, if indeed there are any, where it comes to the perfection which it attains in the vicinity of Niles. While in the Sacramento and San Joaquin valleys the peach flourishes as it does nowhere else, the apricot is apt to be pale in color and lacking in flavor; but in this county it is high colored and the flavor is exquisite. One of the most popular varieties, the Alameda Hemskirk, was originated here. The other varieties which are preferred are the Blenheim and the Moorpark.

A first-class apricot orchard in Alameda County is easily worth \$500 per acre, and some could not be bought for \$750 or \$800. There are a few specially good pieces of land which without trees are worth \$400 to \$500 to the right parties, because in orcharding, as in other lines of business, there is as much in the man as there is in the opportunity.

While cherries and apricots are the king and queen of fruits in this county, there are others which do well, among them being the Bartlett pear. Last year Alameda had the best crop of Bartletts of any county in the State, according to a leading representative of the canneries. Plums are another fruit which thrives, and the smaller fruits and berries find no more congenial home anywhere. There are also many fine orchards of peaches, but it is hardly a peach county, nor is it so well adapted to prunes as Santa Clara. The peach calls for a sediment loam soil and a higher temperature than is generally found here.

The future of the fruit industry in Alameda County may be expected to be one of steady advance; there are many thousand acres of grain land which will some day be turned into orchards, but the period of reckless planting has gone by; the man who knows how can make money, but the one who intends merely to speculate in orchards will naturally look to some other region where land is cheaper.

New commercial channels for the standard fruits open from time to time, and the two chief orchard products of this county, cherries and apricots, have been helped by recent developments.

#### VEGETABLE INDUSTRY.

Alameda is par excellence the vegetable-producing county on the Coast. It has led in this industry for a long time, and the area devoted to vegetables has been increasing lately at a rapid rate, since the profit which is found in peas, potatoes, tomatoes, rhubarb, asparagus, and several other vegetables is large enough to tempt the owners of the best soil to go into the business. Twelve or fifteen years ago the production of early vegetables for the San Francisco market was the most important part of the industry, and this was conducted largely by the Portuguese, who secured locations on the hillsides from Warm Springs around to Haywards and San Leandro.

This hillside region produces the earliest vegetables in the State, or as

early as any, and the potatoes and peas grown here commence coming into market even before spring has arrived, for the winter rains are all that are needed to bring forward the crop in this belt, which is practically frostless. But, while years ago this early vegetable growing represented the predominant industry, and while it is still a rather important one, it probably does not pay as well as it did formerly, since now early vegetables are brought in from Arizona and other southern regions.

The center of the vegetable industry now lies elsewhere. It is found very profitable to grow certain vegetables on the deep rich valley lands, which, although they do not produce so early, bear much larger crops. No very accurate figures on the acreage devoted to vegetables in this county can be obtained, but fairly trustworthy estimates have been made by many persons who have opportunities to know. One of these estimates is that there are 8,000 acres devoted to vegetables in Alameda County, not including sugar-beets, which would add 4,000 or 5,000 acres more. The most important crops are peas, potatoes, tomatoes, cucumbers, and summer squash. A large part of the vegetable business is done between Haywards and Elmhurst, although a great many tomatoes are grown in other parts of the county, including the Livermore Valley. In former times the vegetable business was largely in the hands of the Portuguese and Italians, who conducted it in a small way, on account of lack of capital, but the wealthier American farmers have now taken it up in a wholesale fashion, since they find that it pays better even than fruit. A crop can be obtained the first year after planting, while it takes five years to secure a producing orchard. A great many vegetables are also grown between the rows of trees.

The tomato region of Alameda County extends along the bay shore from Mount Eden to Elmhurst, and the tomatoes produced in this region are preferred by the canners to the Sacramento River article, because they contain more substance and not so much waste; but tomatoes are also grown in other parts of the county. Some of the tomato fields of Alameda County are very large, tracts of 100 acres not being uncommon. The time of the tomato harvest is between the 10th of August and the end of October, although frequently the crop is practically all in before the 1st of October. To secure the best land, if he is farming on rented land, the tomato-grower must pay from \$16 to \$20 an acre, while a fair price for the product is \$7.50 per ton, and the yield is about twelve tons to the acre. A large grower will ship three carloads, twenty tons to a car, each night. Frequently seventy or eighty pickers will be employed on a single ranch.

The potato crop is one of increasing importance, since it has been found that there is good money in producing the big Burbank potatoes and other commercial varieties. The best soil will produce from 75 to 80 sacks to the acre, although in former times record yields of 150 sacks to the acre were produced.

The growing of peas for canning purposes has assumed importance within a comparatively recent period, which is due to the circumstance that the canning syndicate, which operates on the plan of specialties, putting up in each of its canneries the products which are grown best in that particular locality, has made this the pea-canning center. As giving an idea of the importance it has assumed it may be mentioned that when the San Leandro factory was visited recently it was canning peas at the rate of 1,200 cases per day. Each case contains twenty-four cans,

and this makes a daily pack of 28,800 cans; as the season lasts about thirty days many hundred thousand cans are put up before operations are stopped. This same cannery put up last year a tomato pack of 67,000 cases.

One of the prosperous agricultural industries of Alameda County is the growing of rhubarb for the California and Eastern markets. Until a comparatively recent date the local market was the only one supplied, but about seven years ago experimental shipments were made to the East, and since then this branch of the business, after various ups and downs, has become an important one, with a large increase in the acreage as a consequence. At the present time 500 acres of the best land the sun shines on are devoted to the cultivation of the rhubarb plant. San Leandro is the center of the industry, and it is there that success in the business of Eastern shipping has been worked out. During last spring the shipments of rhubarb to markets beyond the mountains, or to be specific, to Chicago—since that is the only rhubarb market which is a paying one up this time—were more profitable than in any former year, and as a consequence about 200 acres have been added to the area formerly cultivated. Twenty carloads were shipped this year, each car containing 560 boxes. The boxes weighed about 42 pounds each, and the shippers received a profit of something over \$1 per box, net. The San Francisco shipments, although larger in amount, were not quite so profitable; but the home and foreign shipments taken together averaged a net return of a dollar. The shipments to San Francisco are about fifty carloads a year. It is a rather remarkable circumstance that the San Francisco markets appear able to stand a carload per day, while one carload in two or three days in the East is as much as the markets will absorb. When the plant sells at such a rate that it will net \$1 per box, the profits are large. It will pay 10 per cent interest on land worth \$1,000 per acre. The vegetable land around San Leandro is not worth quite \$1,000 per acre, but it has sold as high as \$700, and recently \$500 per acre has been refused by owners of choice land.

The E. B. & A. L. Stone Company have leased 100 acres near Mills College for the establishment of a rhubarb farm. The company proposes to set out 500,000 plants at a cost of 5 cents each, or a total of \$25,000. If the experiment is successful, the Stone Company, it is said, will farm 1,000 acres of rhubarb next season.

#### HOP FIELDS.

The hop industry is chiefly located near Pleasanton, and during the picking season employment is given to some 2,000 pickers.

The product of the Pleasanton hop fields for several seasons has been purchased by Guinness, the London brewer and manufacturer of a pale ale, exported to all parts of the world. Pleasanton hops command a premium in the London market, and there has been inquiry for the same from Australia. Last year one entire train was made up of cars laden with Pleasanton hops, which were placarded and sent East, and attracted much attention in passing through the country. While a largely-augmented force of employes is required during the hop-picking season, the cultivation of hops and the various other products on the ranches in the vicinity of Pleasanton require the services of a large number of employes throughout the year, and is a source of large revenue to the prosperous town of Pleasanton.

## SUGAR-BEET INDUSTRY.

Sugar-beet culture is one of the important industries of Murray township. The establishment of the factory of the Alameda Sugar Company at Alvarado made it possible for this branch of agriculture to be carried on here, and, in fact, in all sections of the county adapted to beet-growing, at a fine profit to the producer. The plant of the Alameda Company is as well equipped as any in the State. It has a capacity of 850 tons of beets daily, producing in sugar about one tenth of that amount. During the beet season some 200 hands are employed. The mill originally had a daily capacity of but 350 tons, but the industry grew to such an extent that the company found it necessary to increase its plant. Extensive improvements were made last year. New buildings were constructed and machinery added to bring the factory up to the present capacity.

This year the factory is manufacturing into sugar the product of 6,000 acres of beets. The price paid is \$4.50 a ton, delivered at the mill. Next year the price will be \$4.75. The secret of successful beet-growing is deep plowing. This is said to be the reason why the tonnage per acre at Pleasanton, where the soil is plowed to a depth of from 14 to 16 inches, is nearly double that of other localities.

## GRAPE-GROWING AND WINE-MAKING.

While Alameda is not usually classed as a viticultural county, still it has about 4,000 acres of vines, and some of the best wine in the State is made here. The Livermore Valley and the hilly region adjacent have come to be recognized by experts as perhaps the very best district of California for the production of high-class wines, or if there is any rival to this region it is found only in the hill lands of Napa County.

Alameda County did not share in early booms, since before Livermore vineyards became productive, reverses had overtaken the wine-makers and these high prices have never since been repeated. Following the general decline in the vineyards, owing to the low prices of wine, there came the phylloxera pest, which ravaged the principal vine districts of the State, and for a time the entire industry lay under the shadow of misfortune. When the revival began, about five years ago, Alameda County enjoyed her share of the new prosperity, and to-day first-class vineyard property commands from \$200 to \$300 per acre, with an upward tendency.

Of the estimated acreage of 4,000 acres in this county, about 3,000 acres are in the Livermore and Pleasanton districts, situated in Murray township, and the other 1,000 acres in Washington township. Outside of these two townships the area devoted to grapes is merely nominal. Practically all the vines in the county are of the wine-producing varieties, there being not more than 100 acres of table grapes. Wine vineyards are the more profitable.

The majority of these vineyards are planted to those varieties of grapes which produce the highest type of wine, and as a consequence the yield is much smaller than would be secured from more common varieties. From two to three tons per acre may be set down as the average yield of the best varieties. On the hill slopes, where the choicest grapes are grown, a yield of two tons or even of one and one half tons

per acre is considered satisfactory. The deeper valley soils produce a larger crop, but the wine is not so fine. Even where only two tons per acre are produced the profit is fair if the grapes can be sold at \$25 or \$30 per ton. This year the prices are the highest ever paid in this county, running as high as \$35 for the best grapes; nothing will be sold for less than \$20 per ton.

In the Livermore district the wine industry is really only in its infancy, since the vintage has never amounted to as much as 1,000,000 gallons in any one year. The area in vines is but a small fraction of what it will be some day, for there are thousands and thousands of acres of land just as good as any which is now utilized. The present vineyards, being practically all on resistant stock, are permanent, and from this time forward there will be no backward step. A large portion of the area in vineyards in Washington township has been affected by phylloxera, but all the new vineyards are of resistant stock and that misfortune will not occur again.

#### SALT PRODUCTION.

The average annual output of salt recovered from San Francisco Bay, in Alameda County, for the past ten years has been about 70,000 to 80,000 tons, including both coarse and fine salt, varying according to the length of the seasons. The recovery of salt by solar evaporation in this county was begun in 1857, but did not become an important industry until in the seventies. Since that time it has steadily grown until at present the evaporating vats and refineries extend for about fifteen miles along the bay shore from Newark to Russell station; the available salt lands covering about 8,000 acres. Including clerical help and teamsters, the industry employs about 500 men.

In the past ten years the market has gradually extended beyond the local demand, until Central and Northern California, the Hawaiian Islands, Washington, Oregon, British Columbia, and Siberia were included. With the extension of the markets the Alameda County producers were met by foreign and Utah competition. The markets formerly included Arizona and that section of the southwest, but the salt from the salt-beds at Salton in Southern California and from the Great Salt Lake in Utah has about crowded Alameda salt out of that market.

These markets now consume about 115,000 tons of coarse and fine salt annually; the outside producers furnishing from 35,000 to 40,000 tons of that amount. But the Alameda County makers are each year improving the quality of fine salt; and a local authority on salt production gives it as his opinion that within the next two years this county will control and supply these markets entirely, with the possible exception of Siberia.

The salt recovered from San Francisco Bay has a lime basis, and produces a better quality of fine salt than that recovered from the Great Salt Lake in Utah, which has a soda basis. Alameda County salt has been tested and proven to be adapted to the manufacture of muriatic acid, caustic soda, soda crystals, hyposulphide, glauber salts, sodium sulphide, chloride of lime, and soda ash. So that it is within reasonable probability, considering the improvements contemplated by salt

refiners, that these by-products will soon become a part of this growing industry. A market for these by-products will be found just as the market for salt has been ; and whatever other effect the trust may have upon the industry it is not likely to stay the progress of it, so far as concerns Alameda County.

#### STOCK-RAISING AND DAIRYING.

Though Alameda is not properly a stock-raising county, it has a large quantity of fine stock and makes much fine butter. The condition of this industry shows how advantageous is diversified farming, and how all the resources of the land and situation are utilized.

On the lands unsuited to fruit in this district the dairy industry is becoming more and more important. There is a good deal of hilly land where fruit trees can not be cultivated with profit. Formerly the best done with this was hay, and at \$7 to \$8 a ton there was little for the farmer in this kind of farming. People have just begun to learn that they can double their sources of profit by turning the hay into milk, and the dairy industry has had a steady growth. In Haywards itself this has been stimulated by the establishment of a creamery. Judging from the promises made to the management the number of cattle in the tributary country will be doubled in the next year. Farmers in this district, who have kept careful account of their returns through a number of years, say that a cow will return between \$45 and \$105 gross a year. On irrigated land one cow is kept to the acre; on unirrigated one to about two and a half acres, the proportion varying with the land. The near market offered by San Francisco and the bay cities operates here as elsewhere to great advantage.

The poultry interests of the county are very extensive. All classes thrive well. The county has many advantages for the raising of poultry, among others being the nearness to the two large markets of Oakland and San Francisco. It is estimated that the returns from this industry alone amount to about \$1,000,000 per annum.

#### MANUFACTORIES.

The manufactories of Alameda County comprise, outside of Oakland, the county seat, extensive canneries at Haywards; an oil refinery and pottery at Alameda; iron works and furniture factory at West Berkeley; car factory at Newark; sugar refinery and salt works at Alvarado; wineries at Irvington, Mission San José, Warm Springs, and Livermore; agricultural machinery and traction engines at San Leandro; brickyards at Livermore; and a great number of minor establishments of other kinds at other points.

## ALPINE COUNTY.

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Alpine County is one of the mountain counties of California, and its principal industries are mining and lumbering. It has but a small population, the last census placing it at 509. Its geographical boundaries are, north the State of Nevada, east Mono, south Tuolumne, and west El Dorado, Amador, and Calaveras counties. Its area is 882 square miles, or 535,000 acres. Its cultivated lands will reach 5,000 acres.

The county is a succession of mountain ranges, with high and precipitous peaks, interspersed with numerous lakes, rivers, creeks, and beautiful valleys. Silver Mountain is one of the highest peaks in the county, having an altitude of 10,000 feet. The town of Silver Mountain is situated at or near the base of this mountain. Round Top is another one of Alpine's towering peaks; it is 10,600 feet high. There are numerous small lakes throughout the county, the waters of which are clear and cold. Many of them contain mountain trout. Of these are Blue Lakes and Caples Lakes, in the western part of the county. The county is bountifully supplied with brooks, creeks, rivulets, and rivers, many of them heading up in the mountains, fed by the numerous lakes and the melting snow, which keep them running through the summer season. The Carson River heads in the southern part of the county, and flows from south to north through the county. It is fed by numerous streams, viz., the East Fork of Carson River, the West Fork of Carson River, and Woolb, Silver, Monitor, Smith, Mogul, and Indian creeks.

Among the mountains are numerous valleys. The largest and most noted are: Diamond, Hermit, Pleasant, Hope, Faith, and Charity. Diamond Valley lies in the northeastern part of the county, and contains some very rich, productive ranches, producing wheat, barley, hay, oats, and potatoes. The three sister valleys of the county—Faith, Hope, and Charity—are located in the northwestern part, at an altitude of 7,500 feet above sea-level. These valleys are inhabited only during the summer months, and then by stock-raisers and dairymen. The dairy interest in these three valleys is of considerable importance, and more than 50,000 pounds of butter of excellent quality is produced annually. Pleasant Valley is near the town of Markleeville, where considerable hay is cut and marketed to the residents thereabouts. There are many other small valleys throughout different parts of the county, where sheep and cattle are grazed during the summer season. The nutritious bunch grass, which grows so luxuriantly in those mountainous regions, is of an excellent quality, and stock fattens very rapidly upon it.

The entire western section of the county is a wild, mountainous region, whose grandeur of scenery vies with the Alpine regions of Europe. From November until late in June the region is wrapped in a mantle of snow, varying in depth from two to fifty feet; during the

remainder of the year it forms a vast mountain pasture for thousands of sheep and cattle that are driven there from the lowlands of the State to feed during summer and fall. The greater part of the surface of this mountainous region, as well as of the lower and eastern section of the county, is covered with forests of heavy and valuable timber. All the coniferous trees common to the western slope grow to a large size on all the mountain sides. When the Comstock mines in Nevada were in their zenith the wood and lumber business of the county was quite an important factor in its activity, but since the decline of the mines there this branch of business has been greatly crippled; yet now there is cut annually 750,000 feet of lumber.

In the northeastern part of the county farming is carried on to a considerable extent. Upper Carson, Diamond, and Dutch valleys are the chief seats of this industry. In the elevated valleys among the mountains, summer dairying is an important industry.

The many beautiful lakes high up among the mountains are favorite summer resorts. The Blue Lakes, especially, are becoming a famous rendezvous for summer pleasure-seekers. In many parts of the county are mineral springs, both hot and cold.

The climate of Alpine County is, as its name and topography would indicate, decidedly alpine in character. With its western boundary in the high Sierras, and its whole area in the mountains, its winters are long and rigorous, and its snowfall heavy.

In the valleys the soil is a heavy alluvium, very rich and fertile and yielding heavy crops where properly cultivated. But little fruit is grown in this county. Some very excellent apples and pears are produced, but owing to remoteness from market, and lack of transportation facilities, little finds its way into the market, the entire output being used for home consumption.

Markleeville, the county seat, is located on the west bank of Carson River, and reached by stage via Reno and Carson. It has one newspaper, hotels, stores, and dwellings. Other towns are Monitor and Silver Mountain.

There are at least twenty irrigation ditches in operation in the county, and their value is estimated to be from \$15,000 to \$20,000. Some have no name, a good many are not assessed, and the assessed value, where given, is about one third the real value. The Blue Lakes Water Company has four large reservoirs in the western part of the county. These are of great value and constitute an important part of the plant of the Standard Electric Company. The Union Water Company has two large valuable reservoirs in the southern part of the county, from which the Utica Mining Company at Angels, Calaveras County, gets its water. Two companies of Carson Valley farmers own and control at least twenty valuable reservoir sites in the central part of the county, upon eleven of which more or less work has been done in the construction of dams and in which water has been stored and utilized.

The mining industry, so long dormant here, is now giving promise of large results in the very near future.



## AMADOR COUNTY.

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Amador County is located between the Cosumnes and Mokelumne rivers, and extends from the San Joaquin and Sacramento valleys on the west to the summit of the Sierra Nevada Mountains on the east—a distance of more than 75 miles. Its altitude ranges from 300 feet above sea-level in the western portion to something over 9,000 feet in the eastern end of the county; therefore, it is blessed with a climate that should satisfy either the pleasure-seeker, the woodman with his ax, the miner with his pick and shovel, or the farmer with his plow and hoe.

The resources of Amador County are many and varied. For many years it stood as one of the leading gold-producing counties of the State, and even at the present time it has perhaps the greatest number of dividend-paying mines (quartz mining being specially referred to). Copper is also mined in considerable quantities, with many favorable prospects yet undeveloped. The western portion of the county is underlaid with immense beds of soft or fuel coal, many thousands of tons having already been shipped to different parts of the State. Many other sources of undeveloped wealth lie at its door, only awaiting the combined efforts of labor and capital to make this one of the most prosperous counties in the State. Particular attention is called to the unlimited beds of the finest potter's clay that can be produced on the coast, being right alongside of the railroad. There are many other sources of wealth, such as fine building-stone, roofing slate, and beautiful marble, of which more could be said were it not for occupying too much space.

The western portion of the county is composed of rolling hills, interspersed here and there with beautiful little valleys, the land of which is adapted to any and all kinds of agricultural products, such as wheat, barley, oats, corn, potatoes, broomcorn, and alfalfa. All kinds of garden vegetables grow in profusion, when given a reasonable amount of care. The rolling lands, which constitute the greater portion of the county, are composed principally of a gravelly, or red loam, soil, and are covered more or less with oak timber, an undergrowth of brush, and wild grasses, which make them well adapted for the raising of stock, which is one of the leading industries of the county. Horses, mules, sheep, hogs, and cattle are raised in considerable numbers, especially cattle, of which many fine herds are owned in the western portion of the county, where they are kept during the fall, winter, and spring months without other feed than that which they glean from the natural products of the soil. In summer they are driven high up near the summit of the Sierra Nevadas, there to graze along the mountain sides, just below the rim of the melting snow.

Dairying is another industry that must not be overlooked. Ione, in the western part of the county, and at the railroad terminus, boasts of having the leading creamery in this part of the State, turning out daily hundreds of pounds of beautiful yellow butter, which commands the

highest market prices. Ione also boasts of having the leading flouring-mill in this part of the State, with a capacity of 100 barrels of flour per day, furnishing a home market for the farmer's grain.

Poultry-raising is an industry that is carried on to a limited extent, and at remunerative prices. Chickens range in prices from \$3 to \$5 per dozen; turkeys, from 12 to 18 cents per pound; eggs, in winter months, from 25 to 35 cents per dozen, and in summer months from 15 to 25 cents per dozen.

Fruit-growing, which, it might be said, is just in its infancy, is carried on in all its branches. While there is as yet but few large orchards and vineyards in this county, nevertheless it has been demonstrated that the climate and soil of Amador County are equal to any in the State for the growing of apples, peaches, pears, plums, prunes, quinces, berries in great variety, and grapes in particular. Oranges grow to perfection; as yet the quantity is limited, but the quality is unsurpassed. The olive is another fruit that has been experimented with in the foothills to a sufficient degree to prove its absolute success, and in the near future its value will become more fully appreciated and its cultivation a stepping-stone to wealth and prosperity.

The central portion of Amador County is covered with great forests of pine, spruce, fir, and hemlock timber, in which are located some extensive lumber plants that employ scores of laborers in the cutting and hauling of lumber to supply the mines that are situated twenty-five miles below.

One other valuable enterprise that Amador County may well be proud of is the plant of the Standard Electric Power Company. It is located about seven miles east of the town of Jackson, and is destined to furnish power and light not only for Amador County, but also for the City of San Francisco and intermediate points. The plant, which represents a cost of something like \$6,000,000, is to be run entirely by water power, the supply coming from the never-ceasing streams and melting snowbanks up near the summit of the Sierra Nevada Mountains, the water being caught and retained in immense reservoirs until needed.

Amador County is almost invariably blessed with its share of rainfall, the average precipitation being about 23 inches; hence its farmers have not found it necessary as yet to adopt a general system of irrigation, although the supply of water would be ample, and to spare, if it were properly husbanded in large reservoirs, for which there are many available sites.

Prices of land have a very wide range, governed largely by quality of the soil and location, and also by the amount and character of the improvements thereon. Alfalfa land, or land that is already in a high state of cultivation, is held at from \$100 to \$300 per acre; yet there are thousands of acres of land, at present only used for grazing purposes, and well adapted to the growing of grapes, olives, figs, oranges, etc., that can be had for from \$5 to \$40 per acre.

Amador County had the honor, in the year 1889, when she made her first exhibit at the State Fair, of being awarded the first prize for the best county display and quality of products. One of the leading horticulturists of the county, Mr. George Woolsey, was awarded the gold medal for the best individual display, which speaks well for the resources of the county.

The climate varies with the topography, in the lower portions being similar to that of the Sacramento Valley—summer days usually warm, sometimes hot, tempered down by afternoon breezes, and cool at night. The winters are pleasant, with frosty mornings, similar to those of Sacramento, though with more bracing and clearer air, owing to greater altitude. The highest altitudes are cool and spring-like in summer, and decidedly cold in winter, with biting frosts and heavy snowfalls. Average annual rainfall at Jackson for ten years, 31.81 inches; average annual rainfall at Ione for ten years, 19.63 inches. The difference is due to difference in elevation and topography.

The production of hay, grain, alfalfa, and vegetables is naturally limited to the demands of home consumption. Where suitable soils are selected, however, the yield is large.

The Foothill Experiment Station of the State University is located in this county, 5 miles from Jackson, on the Amador ditch. It contains 36 acres, and is devoted to testing the adaptation of soils and location to the various fruit trees and vines, deciduous and citrus.

## BUTTE COUNTY.

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Butte County, which is one of the chief agricultural and horticultural counties of the State, occupies a position in the northeast portion of the Sacramento Valley; it is bounded on the west by the Sacramento River, and on the east by the summit of the westerly range of the Sierra Nevada Mountains. Its total area is approximately 1,730 square miles, or somewhat larger than the State of Rhode Island. One half of the whole may be properly termed foothill lands, and of the remainder one fifth may be dominated as mountainous, leaving about one third of the entire area as fertile valley or agricultural lands. The mountains are heavily timbered, giving place to important lumbering interests; the foothills are covered with oak and smaller growth, while the valley lands have, with the exception of the adobe soil, splendid growths of mammoth oaks.

The county is so situated that it has all the advantages of cheap and ready transportation. The Sacramento River, along its western boundary, affords communication by water for the passage of vessels at all times of the year, while the California & Oregon Railroad traverses the center of the county its entire length; a branch of the same line extends to Oroville from Marysville; thus giving all the more important parts of the county ready communication with the markets of the coast and the seaport at San Francisco.

### PRINCIPAL TOWNS.

The principal towns of Butte County are Chico, Oroville, Gridley, Biggs, and smaller villages and hamlets in valley and mountains.

Chico is the metropolis, and is on the California & Oregon Railroad, in a rich agricultural and horticultural section. It is an incorporated city, with a full corps of municipal officers, and has a population, with suburbs, of fully 5,000. It is the educational center of the northern half of the State, being the location of a State Normal School, possessing a splendid building, thoroughly equipped, and with over a score of instructors, and between four and five hundred pupils in regular attendance. The public schools consist of three buildings, with another to be erected this year, and sixteen instructors. A high school will be formed this spring, the necessary steps having already been taken. Chico has wide, tree-lined avenues, lighted every night of the year, purest water, piped to every door, and a complete sewer system now being constructed, for which \$45,000 in bonds were recently voted. It has intelligent, progressive people, and is a growing city and a desirable place in which to establish a home. Nine or ten church denominations are represented.

Oroville is the county seat, and is situated at the terminus of the Northern California Railroad, running from Marysville, 28 miles distant. It is a prosperous, growing place of 2,500 people. It has a union high school with three instructors, and public schools with seven teach-

ers. There are numerous churches. Light and water works furnish those necessities. Oroville is the center of the orange-growing district, and is besides the leading mining town of the county. The great dredger mining industry near there, which will continue for many years to come, is the means of distributing much money there, and the town is growing rapidly. Every dooryard is an orange grove, and its people hospitable and anxious to show to newcomers that section's advantages.

Biggs and Gridley are on the California & Oregon Railroad in the valley proper, and in the midst of fertile farms and great orchards. Both have excellent public school facilities, and the latter a union high school. Their population is about 1,000 each. Both have several churches and are growing towns, which with a proper development of their resources, will go forward into cities.

#### CLIMATE.

The climate of the county is similar to that of all the interior parts of California, with the exception that its situation near the Sierra Nevada Mountains induces a more abundant rainfall than have many of the other interior counties, thus rendering a failure of crops practically unknown, and reducing the expense of farming and fruit-growing to a minimum, because of the absence of irrigation requirements. In the higher parts of the county during the winter months some snow falls—just enough to insure to the numerous streams crossing its area living water during the long summers. In the foothills the climate is more delightful, no snow falls and frost comes but seldom. Warm summer days are tempered by cool nights, and everything is propitious for the luxuriant growth of all plant life. In the valley the climate is but a modification of that of the foothills, long rainless summers giving opportunity for the garnering of grain and the curing of fruit. In September the rains begin, and from then until May are of frequent occurrence, so interspersed with faultless, spring-like days as to give to all vegetation the moisture needed and not so plentiful that damage accrues. Frosts come infrequently; and until the rainless summer begins, hill and dale are covered with verdure, giving sustenance to the herds of sheep and cattle that find grazing places and their sole feed thereon. As before stated, the rainfall is abundant and a "dry" year is unknown. It varies from about an average of 25 inches per annum in the valley to considerably more in the foothills and mountains.

#### WATER-SUPPLY.

Irrigation is not generally practiced in the growing of fruit or grain, except citrus fruits; but should it be deemed advisable in the future, no county in the State possesses the natural facilities that Butte does. The great Sacramento River runs along its western boundary, while in the eastern section the Feather River bisects the county, with enough water to irrigate the whole of the lands that are adapted to fruit; Butte Creek, another large stream, runs through its center, while Big Chico, Pine, Mud, and numerous smaller, but never-failing, creeks run through thousands of acres of its most fertile lands. But without these supplies

nature has provided in the valley portions immense subterranean reservoirs, easily accessible by shallow wells of from 12 to 20 feet, which countless pumps can never exhaust or lower. With cheap power, which the county now in a measure possesses (it being traversed by several electric power lines), the irrigation of all its lands adapted to fruit, stock, or garden is not a problem of any consequence. In the eastern section of the county, where orange and olive growing has now assumed great proportions, irrigation is generally practiced, and a shortage of water-supply is never known. Many of the irrigating canals were originally constructed for mining purposes, but with the passing of the necessity for such use they have been converted into means for cheaply irrigating the lands. According to the Assessor's reports there are within the county the following ditch properties, with mileage:

	Miles.
South Feather Water and Union Mining Company.....	42
Palermo Land and Water Company .....	44
Cherokee Mining Company .....	50
Oroville Water Company.....	33
Private ditches.....	125
Total .....	294

### THE SOIL.

The soil of the county varies with location. In the hill section it is mostly of a red, gravelly quality, which experience has shown is best adapted to citrus fruits and olives; in the valley proper it is divided into three qualities: adobe, which is solely devoted to grain, and which in favorable seasons produces immense crops; the bottom lands along the creeks and rivers, where garden and fruit and grain all do well; and the black loam lands which prevail about Chico, unequalled for fruit and grain. In the county there is scarcely a foot of land which, if properly worked, can not be made to produce abundantly of some marketable product. Even in the mountains are many little valleys where hay and grain and fruit and stock provide plentiful livings for families who work their lands to the best advantage.

### AGRICULTURE.

The products of Butte County are many and varied, ranging from the orange, lemon, and olive of the semi-tropics, to the apple and fruit and grain of more northern climes. To these direct products of the soil must be added the great stock interests, also the mills which convert the timber of the hills into lumber which finds its way all over the West. In the valley portions grain-growing has been, since the settlement of the county, one of the chief, and for many years was almost the sole, product grown. Tens of thousands of acres are yet devoted to this industry, and in wheat, barley, and hay, Butte is one of the foremost counties of the State. As stated above, climatic conditions and rainfall are such that a failure of crops is practically unknown. Conditions may arise occasionally which make a shortage, but a total loss is unheard of.

The vast expanse of country reaching from Chico, Dayton, Nord, and Durham on the north, past Nelson, Biggs, and Gridley to the county line on the south, and from the edge of the foothills on the east to the

Sacramento River on the west, is as fertile and beautiful a body of land as the sun shines on, in a measure farmed, but capable of supporting ten times its present population. This is the great grain-growing section of the county, though much of its territory has in later years been turned from wheat fields into orchards. Much of this land never sees a human being but twice a year—once at plowing and seeding time and again at harvest. The immensity of the holdings prevents thorough working, though happily the cutting-up of the large ranches has commenced, and the tendency of the times to smaller holdings has been inaugurated in Butte County. The average output of grain—wheat and barley—is estimated to be from 35,000 to 40,000 tons annually. It is impossible to arrive at the exact figures, but they will not vary much from the foregoing. The most of this goes out of the county by rail and water to all parts of the world. A large supply of the barley is fed to stock at home, and much of the wheat is converted into flour in the three mills within the county—at Chico, Oroville, and Durham. For the current year there is a somewhat increased acreage sown. The growing of hay is another important industry to be found within the section named, and many hundreds of carloads are annually shipped from the county, besides that used for home consumption. Grain- and hay-producing will, for many years to come, be one of the principal industries of the county, and to which thousands of acres will be devoted, despite the tendency in some localities to subdivide the lands.

#### HORTICULTURE.

Butte County in fruit production has reached that stage where it is to be classed as among the first in the State. According to the Assessor's report for the year 1901 there are nearly one million bearing fruit trees within the county, besides probably a third more to be classed as non-bearing. The Assessor states that these figures are in a great measure unreliable, in that owners of lands fail to turn in the proper number, and that the figures are far too low. According to the report, however, there are within the county the following trees:

Apple.....	8,175	Pear.....	20,425
Apricot.....	14,450	Prune (French).....	75,200
Cherry.....	9,600	Prune (other kinds).....	8,115
Fig.....	9,320	Orange.....	307,800
Olive.....	71,000	Almond.....	25,375
Peach.....	125,000	Walnut.....	965

The four most important kinds, as will be noticed, are the orange, the peach, the prune, and the olive.

*The Peach.*—The natural home of the peach is in the rich valley lands about Chico, Durham, Biggs, and Gridley, with other important orchards in the vicinity of Oroville and in the adjacent foothills. The Rancho Chico orchards at Chico and the immense orchards at Rio Bonito and elsewhere along the Feather River constitute the largest single holdings devoted to this fruit in the county, and at least two of these plantings rank among the largest in the world. Butte County is essentially the home of the peach, and during the harvest season hundreds find employment in the orchards, drying-yards, and canneries. The quality of the fruit is of the best, and in years of average yield a peach orchard is a handsome source of profit to the owner. It is largely

to this fruit that the owners of small tracts in the sections of the county named have and are planting their lands. Planting of this fruit during the current year promises to be largely increased, and each succeeding year for many years to come will doubtless witness an increased acreage.

*The Orange.*—In orange-growing, Butte County occupies a unique position among the counties of the State. Geographically it is classed as one of the northern of the State, and yet climatic conditions are such that it is fast forging to the front as one of the chief of the orange-growing counties. The chief orange-growing sections are about Oroville, Palermo, and Thermalito, along the edge of the foothills, though the fruit does well in all parts of the county, and is successfully grown at Biggs, Gridley, and Chico, and in all valley parts. Strange as it may appear, Butte County annually sends large quantities of oranges to Los Angeles, for the reason that the fruit here ripens from six weeks to two months earlier than in the southern counties, and before the holiday season it is practically all disposed of, thus being first on the local and Eastern markets and netting shippers the highest prices paid during the year. Los Angeles, even, has to send to Butte County for its Thanksgiving oranges. The fruit is clean, free from smut or rust, and there is a never-failing supply of water for irrigation. There are large packing-houses at Oroville, Palermo, and Thermalito, and competition among buyers is keen long before the season opens. Most of the fruit of course goes to the East. Planting is still going steadily on, for it has been demonstrated beyond any doubt that large profits accrue to the grower and that by reason of its early ripening the Butte County orange does not come in competition with the sections of the State where the largest production is had. For the intending settler, this industry offers and will continue to offer unexcelled opportunities.

*The Olive.*—Olive-growing is also an assured success, and as time goes on and the large acreage comes into full bearing it will be among the county's first industries. The olive seems to do equally as well in almost all parts of the county. At Chico there is a large acreage in the fruit, and at Palermo, Oroville, and Thermalito are immense orchards. At all of these places there are olive-oil mills and pickling plants, which annually turn out products which have achieved a wide reputation for excellence, and the demand seems to be greater than the supply. Pure olive oil and ripe pickled olives, manufactured from fruit grown in the county, are now shipped all over the United States.

*The Prune.*—Prune-packing from the large orchards devoted to this fruit in the vicinity of the line of railroad, and especially at Chico, Durham, Biggs, and Gridley, has assumed mammoth proportions. There is a coöperative prune warehouse at Chico, where is stored and from whence is shipped the principal product in this line. The fruit is heavy in sugar, of the best marketable size, and affords handsome incomes to the many growers.

About Paradise, Pentz, Wyandotte, and Bangor in the foothills, are many fine orchards, of these and other varieties, and there are ample opportunities for all those who may contemplate engaging in such industries at all points in the county.

*Other Fruits.*—Mention should be made of the excellent apples produced in the foothills and mountains of the county; the several thousand



fig trees, which seem to find a natural home here; and the great yearly output of apricots, cherries, pears, and almond and other nut crops.

*Fruit Shipments.*—In the spring of 1901 conditions were such that there was a very large shortage in the fruit crop (except oranges and olives), so that a report of the shipments of green and dried fruit from the county for that year would not do justice to the county. The average for the past five years would give a better understanding of the great importance of the fruit crops of the county, and for that reason the figures below are intended to convey that information:

	Cars.
Cured prunes .....	225
Cured peaches .....	250
Cured apricots .....	30
Cured pears .....	32
Cured apples .....	15
Almonds .....	40
Oranges .....	400
Table grapes .....	25
Green fruits (miscellaneous) .....	175

To the above must be added the miscellaneous shipments of olives and olive products (aggregating many cars), small fruits and berries, which go largely in less than carload lots, the large quantities sent to the neighboring mining towns by wagon, and the home consumption. But other than this there are several hundred carloads of green fruits that are packed at the canneries at Chico and Gridley. These canneries are important factors in the county's prosperity, affording a home market for the fruit grown, and giving employment to many hundred men, women, and girls during the summer months. Thus the small grower has a market for his products at his door, and employment for his family during the years before his orchard is in bearing. The mining camps in Butte and adjacent counties are an important market also, and large quantities of fresh and dried fruits are consumed therein each year.

#### VINEYARDS—HEMP-GROWING.

The planting of vineyards during the past year has received a hearty impetus, owing to the demand for wine grapes and the adaptability of the soil of the county to vines. This has been especially noticeable in the vicinity of Gridley, where quite a large acreage has been set to vines.

Hemp-growing in that vicinity is also an important and growing industry, and numerous cars of the fiber were shipped during the past year to Eastern factories. The fiber is described as being of high-grade, and there are opportunities along the river bottoms for future developments along this line.

#### DAIRYING—POULTRY-RAISING.

Dairying has never received the attention in this county that its importance and the adaptability of the soil and climate warrant. There are creameries at Chico, Biggs, and Oroville, but the two former were only operated during a portion of last year. They are now under lease, however, with the promise that during the present year careful attention will be given to their operation. Numerous private dairies in various parts of the county attest the value of the dairy herd, however,

and with the cutting-up of the larger ranches there is certain to be more attention paid to this industry. Alfalfa can be and is grown with great success, and many are turning their attention to this crop, with the result that the dairying interests will benefit thereby.

There is a steadily growing interest in the raising of poultry. During the past year, particularly in the valley sections of the county, many land-owners have turned their attention to the raising of chickens, turkeys, and ducks, principally the former. Near Nelson, Mr. Joel Nelson, a farmer of many years' successful experience, has established poultry yards on an immense scale, with every present indication of success. About Chico numerous small land-owners have gone into the business, and their success will doubtless encourage others during the year to enter the same line. The climate, soil, and feed conditions are such, together with the ever inadequately supplied market, that the greatest inducements exist in Butte County for the further development of this industry.

### LIVESTOCK INDUSTRY.

The raising of cattle, sheep, and hogs has ever been an important industry in Butte County, and during the past year numerous farmers have come to the realization that the devoting of as many acres of their lands as is possible to the pasturage of stock is an industry that pays better than grain-growing. The foothills and mountains afford, during the summer season, abundant grazing grounds, while in the other seasons the low lands and stubble fields of the valley fatten for market many cattle and sheep. Many cars of cattle, sheep, and hogs are shipped each year from the county to outside markets, and many hundred head are driven in from the ranges in the north end of the State to be fattened for market. Stockmen are gradually improving their breeds by the introduction of better stock, and the high prices obtained have placed this industry among the most prosperous of all the varied ones of the county. The tendency is toward a reduction of the large herds owned by a few to the general ownership by the many of a few head, or as many as their lands will support. This tendency will result, in the near future, in more stock in the aggregate and of better breeds.

Large bands of cattle and sheep are herded during the summer in the mountains and in the rich mountain meadows, which are well watered and are clothed with rich natural grasses. A large amount of timothy hay is raised in the mountain meadows of Butte, and the dairy interest is very extensive and profitable, the best of products being turned out under these favorable conditions. Much butter is made, especially in the mountains, where timothy hay and natural grasses are abundant.

### THE LUMBER INDUSTRY.

The lumbering interests of the county were never in a more prosperous condition than during the past year. The mountains of the county abound in fine timber, much of it being sugar pine of the best grade. The largest company—the Sierra Lumber Company—made a phenomenal cut last year, and is preparing to increase that this year. The most of their lumber is floated by means of V flumes many miles

in length to Chico; from whence it finds rail transportation to market, and is also converted into boxes and building material at their large factory in Chico. Numerous smaller mills also operated full time during the season, most of the product being hauled to Oroville and Chico by teams. During the year just closed Eastern buyers have acquired large tracts of lands in the Merrimac, Lumpkin, and other timbered sections of the county. What their object is has not been publicly stated, but there is talk of a narrow-gauge railroad from Oroville to these holdings, with a consequent means of getting the lumber to market in a cheap and rapid manner. Lumbering will continue to be for many years one of the most valued of the county's industries, affording profit to the producers and employment to many men.

#### OPPORTUNITIES FOR HOMESEEEKERS—PRICES OF LANDS.

Opportunities in Butte County for intending settlers were never so good as now. The fruit-growing industry, both citrus and deciduous, has passed the experimental stage, and the profits are easily ascertained and assured. The county offers unexcelled chances for the man of small means with a family to acquire land in small tracts, and, while his plantings are in the non-productive stage, there is work for him and his family, either for others or in the production of poultry and small fruits and berries, sufficient to afford a handsome livelihood.

In the eastern part of the county, about Oroville, Palermo, Thermalito, and Wyandotte, and along that line of foothills, extending to Pentz and Paradise, where citrus fruit-growing is most in vogue, lands in small tracts with abundant irrigation facilities are offered for sale at prices ranging from \$25 to \$100 per acre, according to location and desirability. Bearing groves can also be purchased, though of course the price of these is much higher. In the rich valley sections, especially adapted to deciduous fruits, nuts, poultry, and small stock-raising, with dairying opportunities, some of the richest lands in the known world are now on the market. A large part of the John Bidwell rancho, known all over the United States for its richness of soil and beauty and healthfulness of location, has been subdivided and is now on the market. This ranch was a Spanish grant of over 20,000 acres, made before the American occupation, and until General Bidwell's death in 1900 it was held intact. Nearly 2,000 acres of it are in bearing orchards, and the balance was given up to grain and stock. Most of it is beautifully timbered with oak, and its soil is capable of producing every product known to the State. A portion of this vast estate has been subdivided into tracts of from ten acres upward, any ten acres of which will support a family in comfort. This land is listed at from \$50 per acre and upward, and is meeting with ready sale to a desirable class of people. Already planting and building are going rapidly ahead on the lands. Visitors are courteously received and shown over the lands and given every opportunity to inspect their worth. Other tracts of small acreage about Chico are also on the market, and at Durham, Nelson, Biggs, and Gridley there are also opportunities to buy, in any desired tracts, lands of the highest quality.

There are excellent and unsurpassed opportunities for new settlers in Butte County. Fruit and grain growing, dairying, poultry-raising, garden and berry farming, and stock-raising are still capable of much

further development. The county is great in territorial expanse and capable of supporting many times its present population. Mining and local manufactories afford work to many, and there is certain to be great advancement in these lines in the next few years. The climate is an ideal one as compared to any part of the East, and families can live in ease and comfort on much less than is required where long winters stagnate all effort for so many months in the year.

The progress of the county along all lines during the past year has been marked. More building and improvement have been done in the principal towns of the county than for a decade past. The prosperity has affected all classes, and there is every indication of a continuance during the coming year. There is room in the county for many more desirable people, and the people of the county invite visitors and a comparison of their resources and advantages.

## CALAVERAS COUNTY.

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Calaveras County is located almost directly east from San Francisco, from which it is distant about 130 miles. It is bounded on the north by Amador, on the east by Alpine, on the south and southeast by Tuolumne, and on the west by San Joaquin and Stanislaus counties. The county is triangular in shape, its longest side being 54 miles, and its base, resting upon San Joaquin and Stanislaus, being 32 miles. It has an area of 971 square miles, or 668,000 acres.

The topography of the western part of the county consists of rolling hills and small valleys, the hills being covered with a sparsely scattered growth of oak or pine timber. The eastern portion of the county is mountainous in character, and contains magnificent forests of sugar pine, yellow pine, spruce, fir, and cedar. In this section are found the *Sequoia gigantea*, or Big Trees. These trees are the largest and most noted in the world, being classed as one of the seven natural wonders.

The Mokelumne River extends along the whole northern boundary of the county, and tributary to this is the South Fork of the Mokelumne, with its numerous branches. Extending along the southern boundary is the Stanislaus River with its numerous small tributaries. Running through the county midway between the boundary streams is the Calaveras River, with its tributaries, the Jesus Maria, San Antone, Middle Fork, and South Fork. These streams and their branches are tapped at various points and their waters distributed through 600 miles of ditches to various parts of the county. Springs abound in all sections of the county.

### CLIMATE.

From the peculiar formation and location of the county, the climate is remarkable and widely varied. Divided climatically, the western or valley portion, with an average width of 10 miles, has an mean annual temperature of from 60° to 68°. The foothill section adjoining, to a width of 32 miles, has an average temperature of from 44° to 52°. The mountainous or eastern section has heavy snowfalls in winter, but the summers are cool and delightful.

From May until October the county is without storms. From October to May abundant rain falls. The summers are similar to those of all the inland counties of California, the thermometer ranging from 80° to 100° at midday, but the nights are always cool and refreshing. There is an absence of fogs and chilling winds.

The rainfall in Calaveras is usually ample to insure good crops, the average being about 20 inches.

## SOILS.

Calaveras is strictly a mining county. The great Mother Lode of the State runs through the county. West of the Mother Lode is the copper belt, extending from Copperopolis to Campo Seco. Still west of the copper belt a lead of quartz runs from Knights Ferry on the Stanislaus to a point below Campo Seco; this lead has been prospected with excellent results. There is also what is called the "East Belt," extending from West Point to Murphys.

The mining towns of the county furnish an excellent market for the farmers. There are many varieties of soil in the county. All, however, are impregnated to a greater or less extent with granite, slate, limestone particles, volcanic ash, and iron sulphides.

In the northeastern part of the county is a granite soil; following this comes the red loam of the foothills, then the sandy alluvial soil of the plains, next the black sandy loam of the bottom lands.

In the granite belt the vine and the more hardy fruits, such as the apple, pear, and plum, thrive; while on the red loamy hillsides is found excellent land for fruit and vine culture. The plains are largely given to grain and orchards. The rich river bottoms grow, without irrigation, fruits of all descriptions, together with large tracts of corn, beans, and melons.

## WATER-SUPPLY.

In the southeastern portion of the county the Union Water Company's 90 miles of ditches take 10,000 inches of water from the North Fork of the Stanislaus River, at a point about 8 miles from the extreme eastern boundary. In addition, the company's reservoirs hold in store an amount of water sufficient to supply 500 inches a day for twelve months. This water is distributed around Murphys, Vallecito, Douglas Flat, Altaville, Angels Camp, and thence to Carson.

The Table Mountain ditch takes 500 inches of water from San Antone Creek and conveys it to Sheep Ranch and El Dorado.

The Clark ditch takes its water from the South Fork of the Mokelumne, near the Big Trees. It extends thence westerly over a belt of country about 32 miles long. This system can be extended to cover all the country lying below the northwestern corner.

Joining this system on the north is the West Point ditch, taking 400 inches of water from the Middle Fork of the Mokelumne River at a point 6 miles east of West Point, and conveying it thence to West Point and vicinity.

Following the Clark ditch into the valleys is the Mokelumne and Campo Seco Canal and Water Company's ditches. One ditch takes 2,000 inches of water from the South Fork of the Mokelumne River, 2½ miles northeast of Glencoe. The company's reservoir near Railroad Flat gives an additional 300 inches of water for three months. This extensive canal system covers and supplies Mokelumne Hill, Gwin Mine, Campo Seco, Valley Springs, Burson, Wallace, and Camanche.

The Ide & Terwilliger ditch takes about 500 inches of water from San Antone Creek and conveys it to El Dorado, Cave City, and Old Gulch and vicinity.

The Emery Gold Mining Company has a large reservoir 3 miles east of El Dorado.

The Salt Spring Valley reservoir, now used to supply the North Hill Mine, near Milton, furnishes a large supply of water.

The Lancha Plana and Poverty Bar ditch is at present idle.

Another new ditch system is in course of construction—that of the Calaveras Water, Mining, and Development Company. Two thousand inches of water are taken from San Antone Creek and conveyed by a system of ditches to Round Butte Mine, El Dorado, San Andreas, and vicinity. The company contemplates the erection of a large storage reservoir on San Antone Creek near the Big Trees, which will hold 200,000,000 gallons.

The San Domingo Company's ditch takes the waters of San Domingo Creek, and the company has surveyed a line to the Stanislaus River, and, next summer, intends to construct a ditch.

These ditches are used principally for mining purposes; they serve to show what can be done by a system of intelligently conducted irrigation works, supplied from storage reservoirs, for which numerous sites can be found in the county, and to supply which there is abundant water.

The county is now well furnished with electric power: that of the Standard Electrical Company on the north and west, and the Utica Electrical Company on the east and south. Many quartz mills are now run by electric power, which gives more water for irrigation purposes.

The Assessor's valuation of the water works and canals of Calaveras County is given herewith:

	Assessed Value.
Lancha Plana and Poverty Bar Water Company.....	\$1,000
Union Water Company.....	110,000
Mokelumne and Campo Seco Canal Company.....	60,000
West Point ditch.....	3,600
W. V. Clark ditch.....	4,000
California Company's ditch and reservoir.....	15,500
Ide & Terwilliger ditch.....	1,500
Table Mountain ditch.....	4,500
Old Gulch ditch.....	1,000
San Domingo Company's ditch.....	18,000
Emery ditch and reservoir.....	3,000
Total .....	\$222,100

### CULTURAL PRODUCTS.

Calaveras produces a long list of fruits, both citrus and deciduous. It is not as a horticultural county that Calaveras is known, but a great deal of attention has been given to fruit-growing.

In the citrus belt, which embraces the western part of the county, the orange, lemon, citron, and olive are found, thriving in places with great luxuriance. Citrus fruits are not grown extensively, but where grown are a success.

At Campo Seco can be seen orange trees which are over thirty-five years old, and which continue to bear remunerative crops annually. Mrs. Creighton and C. Borger have trees of the Navel variety which are bearing as fine oranges as can be found in the State. At Jenny Lind, Burson, Poverty Bar, Valley Springs, and Mokelumne Hill oranges and lemons are grown; but owing to the fact that the water companies will not agree to furnish perpetual water for irrigation, no large tracts of citrus fruits have been planted.

Olive culture is doing well without irrigation; there being several large orchards in full bearing in the western part of the county.

In the eastern part of the county, where the rainfall is greater and the summers cooler, very fine apples and potatoes are grown. This district is known as the "apple and potato belt"; and large crops of excellent quality are annually produced, selling at good prices. Deciduous fruits, such as the apple, pear, peach, nectarine, apricot, cherry, plum, and prune, are grown in all parts of the county.

In over one half of the county the fig crop is certain and abundant every year.

For nut-bearing trees, Calaveras seems to have congenial surroundings. In Vallecito, Douglas Flat, and West Point the English walnut is grown to perfection. In the western part of the county there are several large almond orchards. The nuts grow to perfection, but the trees blossom too early, and are sometimes nipped by late frosts.

The local markets consume most of the fruit. The remainder, both dried and green, is shipped to outside markets.

Small fruits do well, but all raised is sold in local markets.

It would be hard to say what part of the county is best adapted for fruit-raising, but the largest orchards are in the western part; this is probably because it is nearest to railroad facilities.

Small orchards are found all over the county.

From the Assessor's books the following, showing the number of fruit trees in the county, is furnished:

	Bearing.	Non-Bearing.
Apple .....	6,000	4,000
Apricot .....	2,000	1,000
Cherry .....	500	200
Fig .....	400	200
Olive .....	6,000	1,000
Peach .....	4,000	1,000
Prune .....	1,000	300
Pear .....	500	100
Orange .....	400	300
Almond .....	1,000	500
Walnut .....	400	300

Grapes are grown to perfection, except in the extreme eastern part of the county. There are about 35 acres in raisin grapes, 100 acres in table grapes, and 1,700 acres in wine grapes. Most of the grape crop is made into wine, as the county has poor shipping facilities.

A greater part of the grain sown in the county is cut for hay, and sold locally; but considerable quantities are allowed to mature into wheat, corn, oats, and barley.

Garden truck is raised in large quantities, but is used for home consumption. The mining towns furnish an excellent market for all that is produced.

#### LIVESTOCK AND OTHER INDUSTRIES.

The increase in the value of cattle has stimulated this industry in the county. There are now over 20,000 head of cattle in the county, mostly in large bands. In the summer months these are driven to pastures in the high Sierras.

Some attention has been given to dairy products. Upon the ranch of Mrs. Adams, near Murphys, are to be found some of the finest dairy cattle in the State.



The increasing demand for horses for war purposes has also stimulated this industry. There are now about 3,000 horses and 500 colts in the county. Fine blooded horses are reared in several parts.

Hogs are raised in large numbers.

The sheep industry is now doing well. There are over 20,000 sheep in the county, and Calaveras wool always brings the top figure.

Angora goats are to be found in several portions of the county. They are a hardy animal, increase rapidly, and are an excellent food.

Very little lumber is shipped into the county outside of the western portion, where it is brought by rail.

There are several sawmills in the county; two near West Point, one north of El Dorado, and two near the Big Trees. These mills furnish nearly all of the lumber used.

In the northwestern part of the county is the farm of Mrs. E. A. Hill, where the pyrethrum plant is grown and buhach manufactured therefrom.

The price of land varies in the different localities, ranging from \$5 to \$50 per acre.

## COLUSA COUNTY.

Colusa County is bounded north by Glenn, east by Sutter, south by Yolo, and west by Lake County. Area, about 1,200 square miles, or about 768,000 acres.

### TOPOGRAPHY.

Of the entire area of the county, approximately one half is the Sacramento Valley, one third arable hills, and one tenth interior valleys, the balance being mountainous. A range of hills runs north and south through the county, parallel with the Coast Range, which forms the western boundary of the county. Between these is a series of smaller valleys. Stony Creek heads within 20 miles of the south boundary of the county, separated by a small divide from the waters of Cache Creek. It thence runs northerly, skirting the base of the mountains, to the northern boundary of Glenn County; then breaks through the range of low hills and flows southeasterly across the valley to the Sacramento River. Several other streams, nearly as important, heading in the Coast Range, flow through Yolo and Solano counties into the tule basin. The Sacramento River, which skirts the eastern boundary of Colusa County, runs on a slight ridge which is higher than the lands lying west of it, and the smaller streams, which only run in wet winters from the hills below, empty into the trough thus formed. This trough begins six or seven miles south of the mouth of Stony Creek, and, gradually widening, becomes a tule basin near the lower end of the county.

### SOILS.

Along the river, bordering the hills, and in many of the smaller valleys, the soil is a loose, rich, sandy loam, easily worked, retaining moisture and very fertile. In some places it is adobe, a light or heavy clayey soil, producing excellent crops, but must be properly cultivated and at the right time. The foothill soil is rich, mellow, easily worked, and possesses every element of adaptation to the production, in perfection, of all fruits known to temperate or semi-tropic countries. The main valley is all alluvial, and has given Colusa County the distinction of being for years one of the banner wheat counties of the State.

### CLIMATE.

The climate does not vary much from that of a great portion of the Sacramento Valley, except that the summer temperature is lower along the river bordered by timber growth than on the plains and among the foothills devoid of timber. In lower elevations the days are warm from the middle of June to the middle of September, but delightful through the remaining nine months. The dryness of the air in summer makes the nights refreshing. In winter some frosts occur. The rains in the val-

leys and on the foothills begin in October and continue at intervals until May. The climate of the Coast Range on the western boundary is one of the finest and most healthful in the world. The average summer temperature is 79.6°. The average winter temperature is 48.5°. The highest occasional extreme is 113° and the lowest 20° for the Sacramento Valley, taken from observations at Colusa, Princeton, Williams, Willows, Orland, and College City. The average rainfall for the same localities is 14.42 inches.

#### AGRICULTURE AND HORTICULTURE.

The main part of the valley is devoted to wheat production. Before the segregation of Glenn County on the north, Colusa in one year produced 7,250,000 bushels of wheat for export. Grain farming is conducted on a colossal scale. Combined harvesters, drawn by traction engines, cut a swath of forty feet; the grain, in sacks, being thrown off at the rear. The same engines, in plowing season, drag twenty-four ten-inch plows, doing in twelve hours the work of one hundred mules for the same time. The grain ranches are mostly owned in very large acreage.

All vegetables, grain, and fruits are raised without irrigation, but the Sacramento River carries sufficient water (and it can be used) to irrigate the whole Sacramento Valley. With irrigation, more than one crop of vegetables or hay can be grown in one season.

All the temperate and semi-tropic fruits grow successfully side by side in this county. There is a wide range of adaptability in the soil and climate. Prunes are a favorite crop; next peaches, pears, and apricots; also cherries, plums, nectarines, almonds, walnuts, and other nuts, olives, grapes for raisins, for table use, and for wine, and apples in the higher altitudes. Citrus fruits are also successfully grown, and although not much extensive planting has been done, they can be grown as successfully as in other sections for the purpose of profit and foreign shipment. The raisin grape thrives abundantly near College City, Colusa, and other points. The fruits of Colusa are marketed by green shipments to Sacramento and the East, by drying, and at the local canneries.

#### LIVESTOCK INDUSTRIES.

The dairying and poultry industries are very profitable. There are several up-to-date creameries with skimming stations located throughout the county. It is an ideal locality for these industries, and the outlook for dairying is especially excellent.

The cattle, horses, and sheep raised in Colusa County are very numerous and of fine grades, though the stock business is subordinate to and dependent on the agricultural and fruit interests. The hog product is quite large.

#### TIMBER AND MINING.

The scattering oak in the county along the streams and in the foothills is used for fuel. The pine, spruce, and cedar in the mountains are not so readily accessible as in other districts, nor so valuable, and have not, therefore, been much encroached upon.

This is not in general a mining county, though in the Coast Range there are deposits of gold, cinnabar, copper, and chromic iron, lying

ready for future development. A good quality of limestone is also found, and a fine cement in unlimited quantities. In the southwestern part of the county there are surface indications of oil and natural gas, and near Sites salt springs are found.

#### PRICES OF LAND.

The prices of unimproved land in Colusa County range from \$10 to \$50 an acre, according to the location and fertility and nearness to rail and river transportation.

Colusa is the county seat, with a population of over 1,600. Other growing towns are Maxwell, Williams, Arbuckle, College City, and Sites. Near the last named place are located the sandstone quarries which furnished the stone used in building the new ferry building and hall of justice in San Francisco; this stone is of a very superior quality.

## CONTRA COSTA COUNTY.

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Contra Costa County is one of the central counties of California, its shore line being within 14 miles of San Francisco. It possesses unusually good traveling facilities, both by rail and by steamer, which fact is proven by its boundaries, which are, on the north, the San Pablo and Suisun bays, the Straits of Carquinez, and the San Joaquin River; on the east, Old River, separating it from San Joaquin County; on the south, Alameda County; and on the west, San Francisco Bay; the county having 70 miles of water-front, nearly all of which is upon deep water, navigable by all vessels engaged in commerce. Its superficial area is 695 square miles, or 439,800 acres. Over three fourths of this area is cultivated, the balance being used for grazing. The only mountain of any size in the county is Mount Diablo, which is 3,896 feet in height and almost in the geographical center of the county.

### TOPOGRAPHY.

About two thirds of the area of the county is rolling and hilly. Lying between the hills are some of the most fertile and beautiful valleys of this great State, which are drained and watered by many streams, the banks of which are bordered by oak, sycamore, laurel, willow, etc., while the hills are dotted with oaks, many of which are of large size.

The farming lands in the eastern section of the county are between the foothills and the San Joaquin River. They are 23 miles in length and from 3 to 6 miles in width, and embrace about 60,000 acres of arable land. The soil is, generally speaking, of a rich alluvial nature, and produces wheat, barley, alfalfa, fruit, and vines. To the northward and between the uplands and the San Joaquin River, is a body of tule lands, embracing in all some 50,000 acres, a large portion of which has been reclaimed within the last few years, and is known as some of the most productive land in the State, being a rich deposit of sediment and decomposed vegetation. Alfalfa, asparagus, potatoes, beans, etc., are the products produced on the largest scale on such lands, asparagus being shipped East by the carload during the early spring.

### CLIMATE.

The climatic effects in Contra Costa County, due to its topography and position, can very easily be traced. Its situation, lying as it does between the Golden Gate and the great San Joaquin Valley, gives it a medium climate, equally free from the fogs of the ocean and from the intense heat of the interior of California. Its mean annual temperature is from 52° to 60°, except in the extreme eastern portion, where it is from 60° to 68°.

Its western range of hills protects it from the cold winds that sweep in from the Pacific during the summer months, while the interior bays serve to modify the heat of the summer sun. The winter frosts are light and of short duration. Roses, geraniums, and other plants bloom throughout the winter season.

The average rainfall is from 18 to 23 inches, which is ample for all purposes of agriculture, horticulture, etc., and there is seldom a season when there is a shortage. The rainy season usually begins in November and ends in April.

### SOILS.

In a report on the soils of Contra Costa County, based on samples taken from one of its principal valleys, Professor Hilgard says:

"This specimen represents the prominent soil features which lie around the landward and northern and western base of Mount Diablo, bordered by outlying spurs of the Contra Costa range. The plains are dotted with large white oaks, which are especially thick near the borders of the streams. Close to the latter we generally find streaks of black, heavy, loamy earth; but farther away the soils are mostly lighter, both in color and texture, and more or less intermingled with gravel. Sometimes gravel ridges of greater or less width indicate the course of ancient channels, and gravel evidently underlies a considerable portion of the plains, facilitating drainage. This is most important, as the prevalent character of the soil is that of clay loams.

"Regarding the soil specimen under examination, while it is taken to the depth of twenty inches, wells dug in the neighborhood show no change of tint to the depth of sixty feet, showing an enormous accumulation of an evidently alluvial soil-mass.

"The sample sent is a brownish-gray loam, which, on wetting, softens quickly and without change of tint. The coarse portion consists mostly of flattened particles of hard shale and quartz, well rounded on the edges.

"The analysis of this soil results as follows:

	Per Cent.
Coarse materials.....	10.75
Fine earth.....	80.25
<i>Analysis of Fine Earth.</i>	
Insoluble matter .....	63.279)
Soluble silica .....	8.842)
Potash .....	.77
Soda .....	.57
Lime .....	1.69
Magnesia .....	2.36
Br. oxide of manganese .....	.17
Peroxide of iron .....	4.91
Alumina .....	12.86
Phosphoric acid .....	.06
Sulphuric acid .....	.01
Water and organic matter.....	5.03

"Chemically the soil shows a large supply of potash and lime, and as regards the latter, there can be no doubt that it is a general characteristic of the soils of Contra Costa County, since lime is abundant in the rocks on the flanks of Mount Diablo, as well as on the Contra Costa range. On the banks of Walnut Creek, the lower portion of the black loamy earth, just above the gravel that underlies at some five feet depth, is full of white gravel or lime concretions.

"The proportion of phosphoric acid in any case would be counted above deficiency. But the determination of its solubility shows (under the head of available phosphoric acid) that practically all of it is in the available state. The soil has a good supply of humus, and therefore of nitrogen. Its power of absorbing moisture is high, and with its depth, constitutes a safeguard against drought and hot winds.

"Its fruit product can not fail to be both abundant in quantity and high in quality, and its best general adaptation would seem to lie in the direction of pears, apricots, grapes, almonds, peaches, etc."

The above analysis and description of soil relate particularly to the Ygnacio Valley, but the soils of the connecting valleys of the Alhambra, Diablo, or Clayton, San Ramon, Briones, and Lafayette are so similar in character, being the alluvial deposits of the same range of hills, that this analysis fairly represents all the above-named valleys.

The following analysis of soil from Burgundy, France, where is produced the most famous wines in the world, shows a wonderful similarity to that of Contra Costa:

Coarse material .....	9.75
Fine earth .....	81.85
<i>Analysis of Fine Earth.</i>	
Insoluble matter and soluble silica .....	78.21
Peroxide of iron .....	5.25
Magnesia .....	3.98
Alumina .....	7.47
Organic substances .....	5.39

In depth, the soil throughout the county shows a remarkable continuity of rich alluvial deposits underlaid by limestone or clay. There is an occasional change to a coarse sandy and gravelly heavy loam of black or brown tint. It has great power for enduring drought, and is easy to work, giving large returns with careful culture. Trees and vines seem almost to laugh in their growth as they push their roots down into this fat soil. The soil in the uplands is in character similar to that of the lowlands, and being drier, is for some purposes even better.

In common with nearly all the coast counties, irrigation is not required to insure crops. The abundant winter rainfall, the absence of the intense evaporating heat of the interior, and the moisture-laden breezes from the ocean, furnish abundant moisture for all forms of vegetable life without recourse to artificial irrigation.

#### FRUIT CULTURE.

The tourist passing through the many beautiful valleys and over the rolling hills throughout Contra Costa County is impressed with the similarity of its general characteristics to the gentle slopes of sunny France. Scattered in all directions are numerous small vineyards and orchards, that with but little cultivation produce the richest results. Beyond and around the northern and western base of Mount Diablo is an uninterrupted body of splendid farming land. There are plains dotted with white oaks, and streams bordered with cottonwood and willows. The wild-oat hill lands, when exposed to the south, are nowhere equaled in the State for olive culture; and there is fruit land all over the county, and no irrigation is required. Among numerous kinds produced, each embracing all the superior varieties, are the pear,

plum, prune, apricot, cherry, peach, quince, fig, apple, nectarine, pomegranate, olive, persimmon, orange, lime, lemon, date, grape, strawberry, raspberry, gooseberry, blackberry, currant; and among nuts, the pecan, filbert, almond, walnut, chestnut. Over 8,000 acres of land are devoted to these fruits in Contra Costa County, and wherever fruit-growing has been tried it has proven successful and remunerative.

### AGRICULTURE.

Notwithstanding the growth of the fruit industry, grain-raising is still very prominent in this county. Many farmers have grown rich from wheat production. The chief product of the eastern section is wheat, although much barley, hay, alfalfa, and fruits and vines are grown. Alfalfa around Byron yields 7 to 10 tons per acre per annum, without irrigation, and is worth from \$9 to \$12 per ton in San Francisco, according to the season. A very large acreage is planted to wheat, oats, barley, and hay.

The raising of sugar-beets is now a growing industry, the increase in acreage this year being close to 1,500 acres over 1901.

Vegetables of all kinds are raised very profitably and on an extensive scale; one tract of land of 2,000 acres is used entirely for the production of asparagus for early Eastern shipment. Potatoes, beans, etc., are also a very prolific and profitable crop in this county, especially in the central portion.

Natural feed is very abundant, both on the hillsides and at a higher elevation, affording the finest kind of pasturage during both summer and winter.

### STOCK-RAISING.

Stock-raising is a most profitable industry, especially fine stock, and considering its size, no county in the State can show better grades of blooded stock. The Oakwood stock farm of 6,000 acres is one of the finest in the State; it has a large number of draft horses, 300 standard trotters and pacers, 200 Devons, and 200 Shorthorns—all of the finest grades; also fine flocks of pure-bred sheep, besides hogs and poultry. Many business men of San Francisco own ranches in this county, and take great pride in their development. Western Contra Costa is especially well adapted to stock-raising and dairying, owing to the fogs and moisture, and the resultant luxuriant growth of natural grasses and their long endurance—early to spring up and late to disappear.

### MINING AND MANUFACTURING.

The only important mining industry is the coal mines of Mount Diablo, although some little mining for precious metals has been done. Prospecting for oil is now receiving considerable attention, with good indications of developing producing wells.

The terminus of the Santa Fé Railroad is located at Point Richmond, in this county, and many substantial improvements in the way of wharves, etc., on a very extensive plan, have been constructed at that town.

Port Costa is the shipping point for the bulk of the grain raised in



California; has warehouses for storing over 160,000 tons of grain, with a dock frontage of 2,500 feet, affording facilities for loading from eight to ten large ocean ships at the same time.

At Pinole are located large stockyards; near Vallejo Junction is the largest smelting works in the State; at Vallona are extensive lumber yards, where ships from Oregon and Puget Sound discharge cargo. At Crockett are flouring-mills of the capacity of 10,000 barrels a day; also agricultural works.

## DEL NORTE COUNTY.

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Del Norte County lies in the northwestern corner of California, and is bounded on the north by Oregon, on the east by Siskiyou, on the south by Humboldt, and on the west by the Pacific Ocean. It has an area of 1,546 square miles, or 989,440 acres.

The eastern portion of the county is mountainous, but in the southern and western parts there is much good agricultural and grazing land. The area suitable to cultivation is confined to the Smith River Valley and a belt along the ocean near Crescent City. A large portion of this county is covered by vast redwood forests, and these extend in an almost unbroken belt from the southern boundary to the Oregon line on the north, with an average width of 40 miles. This land when cleared is very fertile, but the labor of removing the immense redwood stumps and clearing off the partly decomposed logs which cumber the ground is so great as to preclude effort in that direction.

The entire area is practically a succession of mountain ranges broken into narrow valleys. That portion of the Coast Range which traverses the eastern part reaches an altitude of 5,000 to 6,000 feet. Snow remains on the summit of these mountains until late in the summer, and they are rugged and precipitous in the extreme.

Del Norte has an ocean frontage of about 35 miles. The Klamath River is a large stream. The greater part of its course is through this county, which it leaves on the southern boundary entering Humboldt, then reenters Del Norte and empties into the Pacific. Smith River is also a stream of considerable magnitude. Besides these there are a large number of creeks tributary to them, making of Del Norte one of the best watered counties in California.

Del Norte lies within the moist belt, and the precipitation here is much heavier than in most of the counties of California.

The soil in the valleys and foothills of Del Norte is very fertile, that of the valleys being devoted chiefly to dairying, which is here the principal industry. In the foothills some excellent fruit is grown, but in limited quantities, and principally for home consumption. An occasional orchard of apples, pears, and peaches proves that the soil and climate here are well adapted to horticulture, and gives promise of the extension of this branch of industry whenever easy means of reaching the markets shall be had. In Smith River Valley some very excellent apples are produced, and pears, plums, and cherries thrive here as well as in any part of California.

The chief industries of the county are dairying, lumbering, and to some extent mining. Comparatively little land is under cultivation, the average being but seven acres to the square mile.

While Del Norte produces a large quantity of apples, the bulk of her product is consumed locally, but a small portion of it finding an outside market, and this finds its way to San Francisco.

The soil and climate of Del Norte seem especially adapted to the growth of apples. The former is generally a deep, black loam, very rich and easily worked, and the climate is marked by great humidity, and but little very hot weather. While some small family orchards have been bearing in Del Norte for many years past, some have been planted as early as 1850-53, and are still vigorous. Fruit-growing as a business has never obtained a foothold in the county.

Dairying is one of the principal industries, and the output of butter during the year 1901 was over 500,000 pounds, of which 310,000 pounds was the product of creameries. There are quite a number of creameries, well equipped, and second to none in the State. As regards the quality of their output, it is mostly shipped to San Francisco.

While agriculture is carried on only on a very limited scale for home demand, good crops of hay and barley are raised; potatoes and other vegetables of a very superior quality are always a sure and profitable crop.

Lumbering is another principal industry. Sawmills and shingle-mills give employment to quite a large number of persons. The annual shipment of lumber reaches very close to 20,000,000 feet, besides a large output of shakes and shingles. There are now over 190,000 acres of fine redwood timber, besides large bodies of tamarack and other commercial timber.

From the last reports of the United States General Land Office there were over 470,000 acres of unappropriated government land, classified as mountainous, timber, grazing, mineral, and broken lands.

Considerable capital is invested in salmon fisheries, and the output of the fish canneries established on the Klamath and Smith rivers is quite large.

The mineral possibilities of the county offer a fine field for prospectors for gold, copper, and other metals.

The principal towns are Crescent City, located on the coast, and Smith River, located in the center of the dairy and farming districts.

## EL DORADO COUNTY.

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El Dorado County is on the eastern line of California, a little north of the center. It is bounded on the east by the State of Nevada, on the south by Amador County, on the west by Sacramento, and on the north by Placer. Its greatest length, east and west, is 78 miles, and its extreme width is 40 miles. The area is 1,890 square miles.

### CLIMATE.

No similar area in the world contains greater variety of climate with a more agreeable and healthful general result. It is a region of very curious contrasts, owing to the great difference that elevation makes in climatic conditions. On the west the county borders on the plains of the Sacramento Valley, where snow never falls. On the east it contains the summits of the Sierras, where snow is often twenty feet deep in winter and is nearly perpetual. Between these two extremes there is every gradation. It is above the line of fogs. Thunder storms are rare, and never dangerous. Heavy winds are not feared. Snow is seldom seen in the central and western portions, and orange trees are now growing along the western side. The evenings are never sultry in summer, nor the heat oppressive during the day. In spite of the thermometer occasionally registering 100°, sunstroke never occurs, owing to the dry atmosphere. It is a healthful climate, and is peculiarly favorable to asthmatic patients, who breathe easily at elevations of 2,000 feet when they can not live comfortably in the Eastern States, or on the coast line or in the valleys of California. The rainfall averages about 46 inches annually at Placerville, lessening toward the west and increasing with greater elevation. At Placerville it is seldom less than 35 inches, and has reached 72 inches. Failure of grain or hay crops from drought is unknown. In the dry season, from June until October, there is much irrigation, water being conveyed from streams through over 350 miles of ditches for mining and agricultural use.

### AGRICULTURE.

The surface of the county is what is called foothill land, and is much broken. The man who expects prairie land in wide, level tracts will be disappointed. The soil, when properly handled, yields good returns from all the cereals in either hay or grain. They are all raised entirely without irrigation. Clover and alfalfa do well in the county, but usually require irrigation. The yield is sometimes astonishing, several crops being cut in the season.

Indian corn does as well here, when irrigated, as in the Eastern States.

Amber cane, or amber sorghum, thrives. It does not produce as many gallons per acre as in the East, but yields a clearer and sweeter syrup, and sugars readily.

## FRUIT-GROWING.

The broken surface of the county, giving thorough drainage, is exactly what is required for highly flavored fruit, hence the county has been celebrated for the high quality of these products since the first peaches were marketed from Coloma. In the western part of the county, olives, figs, and grapes of all kinds are almost perfectly adapted to the soil and climate. Farther east, at elevations of from 500 to 2,000 feet, peaches, plums, nectarines, prunes, and cherries reach perfection in color and flavor. Apples and pears do their best still farther east, at elevations of from 2,500 to 3,500 feet. Nearly all these fruits will grow anywhere in the county except at extreme altitudes, but they give the best results in the regions named. W. I. Hartwick, six miles east of Placerville, sells apples to dealers in Old Mexico, receiving \$1.50 per box for them at his express office. The cost of the apples at their destination is about \$5 per box, yet the dealers have contracted for his next year's crop of this variety.

Grapes thrive quite well far into the eastern part of the county. The Cedar Hill Vineyard, near Placerville, has produced some of the finest table grapes in the State and has shipped them to Mexico and other distant points for special demand.

Orange trees thrive and bear along the western border of the county, but have never been cultivated as a commercial undertaking.

There are thousands of acres adapted to growing olive trees, and the demand for oil and pickled olives is increasing rapidly. The market for pickled olives as a food product is growing rapidly, and in time they will become a staple in this country as they are in southern Europe and Asia. D. Johnston & Sons, of Sacramento, have a thrifty olive grove near Pilot Hill, from which they are now producing oil of fine quality and pickled olives that find ready sale. Their oil sells at from \$5 to \$6 per gallon.

All the berries thrive with but comparatively little attention. Almonds, walnuts, chestnuts, and peanuts will grow and produce well.

## VEGETABLES.

All kinds of vegetables do well under irrigation. Potatoes, cabbage, and beets attain a size that would astonish Eastern gardeners. D. H. Thompson, of Georgetown, raised ten tons of potatoes of large size and excellent quality on one acre last season. He sold them at 1½ cents per pound.

## DAIRYING—POULTRY-RAISING.

Dairies in this county migrate, being located in winter on the western ranges; in summer, far in the mountains. The business is profitable, but until recently the methods have been very crude, and dairymen are only just beginning to introduce modern methods and machinery.

Many places in the county are adapted to raising poultry. Eggs are still shipped into California and into this county from points farther east, the markets of the State not being supplied by local production, although the poultry products bring fair prices.

## GOLD MINING.

The county received its name from the great quantities of gold discovered here in the early mining days. It is the pioneer county, and was the scene of Marshall's discovery and of the first excited gold-rush. The gold of the shallow, easily accessible placers is now mainly gone, although several hundred people in the county still engage in this primitive industry. The county is crossed from north to south by several highly mineralized belts, the central one being the famous "Mother Lode" of California, all of which contain ledges extending thousands of feet into the earth's crust and bearing more or less gold. It is reasonably certain that gold mining in these fissures will be prosecuted for the next two hundred years, and, in all probability, for a much greater time. It is the history of quartz mining that a body of paying ore is discovered, is worked profitably for awhile, then lost and the mine abandoned. Years later the same mine is opened again, new ore bodies are found or the continuation of the old one discovered, and a new lease of life is given to the property. The process has been repeated many times. Nearly all the famous producing mines of California to-day are old, partially-worked, abandoned mines, reopened and worked under better conditions than existed when work was suspended. Mines that would not pay under old-time methods and expenses, will often yield a handsome profit under modern economy. Capitalists who recognize these facts in making their investments should seek, not the locality where a strike has just been made, and where holders of mining property under excitement ask enormous prices, but rather the locality favorable in its conditions as a gold producer; yet where immediate excitement is lacking. If capitalists will exercise the same prudence and careful management in quartz mining that they exhibit in other business ventures, select their managers or superintendents from those who have proved their executive talent and economy in addition to their technical and practical knowledge of mining; if they will see that their money is expended in actual mining and not in showy display and wastefulness above ground, they will mine in the gold belt of El Dorado County, or in any other of the mining counties of California, with as much certainty of success as attends other lines of business. Two thirds of the failures in mining have been the fault of the so-called "miners," and not the inherent worthlessness of the mines. It has frequently been observed in California that the new owners of a mine build a forty-stamp mill and a small village before they have developed the mine to know that they really need a mill. Similar reckless methods would wreck any other business enterprise if they were applied to it. In El Dorado County the existence of gold deposits in the rocks has been proved by thousands of rich discoveries, and mining on one portion or another of the mineral belt is always being prosecuted, the business being sometimes active, sometimes depressed. During a period of excitement the mining lands are always held at higher prices than when mining is stagnant, and the course for investors to pursue is to buy or bond their property and do their development work when the absence of mining enthusiasm enables them to obtain the initial benefit of low prices.

Other opportunities for the investment of capital occur in the ancient, lava-capped river channels of the county. A complete ancient drainage

system of these channels is to be found, corresponding quite closely with the present streams. The ancient channels, buried from one hundred to five hundred feet, are nearly as numerous as existing streams. They all contain gold in gravel beds from two to twenty feet in thickness, which must be explored by the drifting process, involving considerable preliminary outlay. The ancient channels in the distribution of gold are exactly like modern streams. They are rich and poor in varying localities, but some of the most valuable mines of the county have been developed in them.

#### OTHER MINING.

Copper is found in two belts—one west of Placerville, the other about twenty miles east, where a large belt of limestone, highly mineralized along the walls, makes it a desirable field for exploration by prospectors for both gold and copper. Part of this belt at Indian Diggings has supplied some of the best marble found in California. A copper mine on the western belt is now being developed.

The limestone quarries at Marble Valley, on the western side of the county, supply a very fine quality of lime.

A tract of land near Placerville was recently sold to Oakland capitalists. It is said to contain material valuable for making Portland cement.

Rich float cinnabar has been found near Nashville, but no large deposits have been discovered so far.

Quite a large number of small diamonds of good color have been found in the gravels of the ancient river channels near Placerville and in other parts of the county.

Granite and lava rocks suitable for building purposes are abundant.

#### SLATE QUARRYING.

This county produces roofing slate equal to any in the world. The quarries are in a blue-black slate of the Mother Lode between Placerville and Kelsey. The slate splits extremely well and punches so readily that it is possible to drive nails through it without breaking it. The Eureka Slate Company is now shipping slate in carloads, much of it being used by the United States Government on Federal buildings. The California Slate Company is beginning to develop a quarry on the outskirts of Placerville. Some of the slate has been shipped to Mexico and to the Sandwich Islands. About sixty men are now employed by the Eureka Company. No better roofing material exists in the world than the slate of El Dorado County, and it is a product of which the people justly feel proud.

#### SCHOOLS.

The county is divided into fifty-five school districts, so arranged that every resident is provided with facilities for the education of children.

#### TOWNS.

Placerville, the county seat, contains about 2,000 inhabitants, and is the terminus of a railroad from Sacramento. It has five churches, a

planing mill, two foundries, three newspapers, and all the usual business houses in a town of that size.

Next in size to Placerville is Georgetown, on the north side of the county, which also has a newspaper. El Dorado, Shingle Springs, Diamond Springs, and Coloma are smaller places, the last being the place where gold was first discovered in California.

#### LUMBERING.

The forests of the eastern part of the county support several small sawmills for local supply, and are also the scene of shake and lagging manufacture—the first being used for cheap roofing; the last in timbering mines. The El Dorado Lumber Company is now extending a narrow-gauge railroad from Placerville into the timber in the north-eastern part of the county, expecting to ship lumber and wood extensively. It conveys a carload of lumber on a cable stretched across a river cañon 1,200 feet above the water.

#### POPULATION AND LAND.

El Dorado County, with an area approximating that of Delaware, contains less than 10,000 people. They are mainly either miners in their previous life and training, or they are the descendants of miners, who from their infancy have been used to the "free and easy" methods of a mining community. They are a liberal, hospitable people, and the kindest of neighbors and friends, but, with a few exceptions, life as a farmer or orchardist is not to their taste, and the economical habits of the genuine agriculturist are unknown to them. Many of them hold considerable bodies of land, of which, like Southern Californians of twenty years ago, they are making little use. Owing to these conditions, and the further fact that the paucity of manufactures in California is holding land values in general down much lower than they will be when such manufactures develop, as they will, sooner or later, the prices set upon land in this county are very low. Nowhere in the West can a comfortable home in as fine a climate as earth produces be obtained for as little money.

Inquiries in regard to the northern side of the county can be addressed to J. C. Horn, Georgetown. F. N. Spencer or A. T. Culbertson of Placerville will supply information relating to the central and southern portions.



## FRESNO COUNTY.

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Fresno extends across from the high Sierras to the mountains of the Coast Range, and in this center of the valley is reproduced all that is best and most wonderful in the valley. Every form of agriculture and every industry in any of the counties that make the watershed of the San Joaquin are found in a greater or less degree in this one county.

Its mountains contain lumber and minerals and fine scenery; its level plains grow cereals and fruits, and vines and vegetables; it raises cattle, and its western borders overflow with petroleum. But in addition to this diversity of interests, it has, as a great mainstay, the raisin industry, with Spain as its only competitor.

The development of the county has been a matter largely of the last twenty years. The area of the county is twice and a half that of the State of Delaware, with 5,606 square miles, or 3,587,840 acres, of which it is estimated that 900,000 acres are readily arable. There is a population of 41,000, of whom between one half and one third reside in Fresno City, and all comparatively newcomers, and representing almost every nationality under the sun.

### IRRIGATION FACILITIES.

■ The average rainfall is 10 inches, and therefore cereals can be successfully grown without irrigation. But Fresno is in fact another wonderful example of what irrigation has done and can do. The San Joaquin River forms the northern and eastern boundary line, but the stream is not so well located for irrigation purposes as is the Kings, which, rising in the Sierras, passes south, and then west and north, in a wide curve, through the center of the farming district, carrying, through the summer months, a volume of water equal to 8,500 cubic feet per second.

There are 300 miles of main canals, 1,000 of branch canals, and 5,000 of distributing ditches. The region is a network of streams of water, waiting to be drawn off on the vineyards, deciduous or citrus fruit orchards, or alfalfa fields to promote growth. The cost of water is low, the annual charge being about 65 cents an acre. The perpetual water-right, included with the purchase price of the land, is about \$6.25 per acre.

### AGRICULTURE.

Though great as the raisin and fruit industry of Fresno is, wheat is grown in vast areas, especially in the western section of the county, ranches running up in the thousands of acres and the product in good rainy years amounting to millions of bushels, a considerable portion being worked up into flour in Fresno, where one mill has an annual capacity of 140,000 barrels. Barley is grown in large quantities and so is alfalfa, though the greater part is fed to stock, of which hundreds of

carloads are exported yearly. There are six creameries and many skimming stations in the county, and butter and cheese are exported. One creamery in Fresno city produces 6,000 pounds of butter daily. An unlimited market for dairy products, with the fact that one acre of alfalfa will support one cow in green feed, offers the farmer of limited means openings for immediate and profitable returns. Sheep by the thousands roam over the foothills, the wool clip in seasons amounting to about 15,000,000 pounds.

#### FRUIT CULTURE.

Deciduous fruit shipments, green and dried, represent \$1,000,000 a year. Citrus fruit growing is a developing industry, representing at this time \$100,000 and growing yearly. Watermelons are exported in hundreds of carloads, for it is only in the last few years that Fresno has outrivalled Lodi in San Joaquin, which for years was the melon-shipping center of the State. The vineyards cover about 40,000 acres, of which about 32,000 are in raisin grapes, and the remainder in wine or table varieties. There are over a dozen large wineries in the county, one of which, owned by the California Wine Association, ships 250,000 gallons a year. Excellent port, brandy, sherry, and angelica are made, as well as other varieties. This product is valued at over \$1,000,000.

At the head of the long list of valuable products stands the raisin, with a tonnage of nearly 4,000 carloads. When a vineyard is in full bearing it produces about 4,000 pounds of green grapes to the acre, which will dry to over one ton of raisins. The average product of five-year-old vineyards is a ton of raisins to the acre. The California raisin has possession of the American market, on a reasonable tariff, which keeps out the cheap foreign product, without allowing an exorbitant price to be charged for the home-grown article.

#### OTHER INDUSTRIES.

The growing of nursery stock is a remunerative occupation. Honey is produced in considerable quantity, and more so with the increased product of alfalfa. Alfalfa honey equals in quality clover honey of the East. Gold is mined in the mountains, and 50,000,000 feet of lumber cut annually, most of which is floated down in flumes. There are large planing mills and many lumber yards in the city of Fresno.

#### DAIRYING.

The growth of the dairy business in Fresno County dates back less than four years, when smaller interests merged and became what may be properly called a large clearing-house for butter-fat. Before this, dairying was conducted in a desultory way by ranchmen who gave their time to grain, vineyards, or other possessions, and, these permitting, the cows received attention later on. At this time the farmers find it advisable to attend to their cows. Thirteen skimming stations, covering the territory from Madera to Guernsey, are established, and are buying cream in Kern County as well.

The farmers deliver their milk at the skimming stations, and the butter-fat being removed, the skimmed milk is returned to them, worth

from 20 to 30 cents per 100 pounds, if properly utilized for feeding swine. The average price paid last year to the farmer for butter-fat was 21½ cents per pound. This makes it possible for the farmers with even ordinary stock to realize an average of \$5 per month per cow during the milking period.

It is certain that with sixty acres and a herd of forty cattle, a farmer can have milk the year round, which will give him some cash every month and none of the troubles incidental to the other industries of the county. Taking as an instance the result from a herd of Holsteins, beginning in October, 1900, and ending with September, 1901, the argument is convincing that the higher the grade of stock, the better the returns, as herewith shown:

Month.	Pounds of Milk.	Value in Cash.	Number of Cows Milked.	Per Cent of Fat.
October .....	33,560	\$311 40	47	6.62
November .....	33,493	312 52	55	5.68
December .....	32,380	373 85	60	6.23
January .....	27,664	278 34	60	4.30
February .....	26,387	219 96	60	3.66
March .....	29,825	173 18	40	4.32
April .....	31,622	172 75	45	3.82
May .....	25,211	146 31	33	4.43
June .....	24,886	135 50	45	3.01
July .....	30,847	178 25	34	5.24
August .....	30,975	206 25	34	6.05
September .....	28,500	192 00	36	5.55
Totals .....	366,260	\$2,699 31	549	58.60

The calves and hogs were fed on the skimmed milk, and were, of course, as much a part of the dairy product as the cream itself. The calves were sold at an average age of twelve weeks, and brought from \$10 to \$50 a head, according to the breed of the animal and the promise for the future, many of them being pure-bred Holsteins, while others were "grades." These calves and hogs as by-products of the dairy averaged in value \$19.35 to each cow during the record term.

The value of the milk to the creamery was, of course, in the butter-fat, which brought \$2,699.31. The calves and hogs sold during the same time brought \$871.11, which, added to the receipts from the butter-fat, made a total income from the dairy of \$3,570.42. The expense account stood as follows: For labor, \$1,192.82, and for feed, \$888.75; making a total of \$2,081.57. \$3,570.42 less \$2,081.57 left a net balance of \$1,488.85 to the owner of the herd.

The butter-making process as observed in the creameries is a wonderful improvement on that of three years ago, when, in the main institution, the first churning produced 150 pounds per day. The average dairy production in one creamery alone is 2,500 pounds, notwithstanding the scarcity of milk this season. Feed is becoming more plentiful and the cows are calving, so it is expected that with the ordinary cattle this summer there will be an output of 6,000 pounds of butter daily as compared to 4,500 in the corresponding months last year. There are 476 farmers delivering milk at the skimming stations.

The market for Fresno County butter is two thirds at home in the San Joaquin Valley, and the prices have ranged from 17 to 30 cents per pound.

## WOOL-GROWING:

While in the San Joaquin Valley, as a whole, the raising of sheep is still a great and lucrative industry, the business within the boundaries of Fresno County has materially decreased in volume. This has been due to several causes, but principally to the rapid settling up of the country, the subdividing of large tracts of land, and the consequent reduction of areas formerly used for pasturage. Along the river bottoms of the Kings and San Joaquin, however, sheep-raising flourishes to an extent that would make an Easterner's eyes bulge out. Here, between the months of October and April, scores of bands of sheep averaging in number all the way from 500 to 1,000 are herded year after year. The section is a fertile one, rich in herbage upon which the animals thrive until the dry season sets in, when they are driven into the mountains.

The section around Firebaugh, 45 miles west of Fresno, is the chief sheep-shearing station in Fresno County. There are usually three shearings a year, from April to August, and this shearing season, as may be imagined, is a particularly busy one. The work is done largely, almost exclusively, by Portuguese, Mexicans, French, Spanish, and Italians, and the annual assemblage of this small army of foreigners makes the little town of Firebaugh a scene of the liveliest activity.

During the last few years, as intimated above, there has been a marked falling off in the production of wool, as far as this county is concerned. Whereas something like 3,000 bales per year came into Fresno City during the most thriving period of the business, only about 1,000 bales are handled at present, and it is said that the production of wool in this county would soon decline further but for the prevailing good prices of mutton, which assist in making it profitable. In a word, Fresno has been the first county in Central California to feel the effect of the rapid development of the country in other lines. Adjacent sections must also be affected by it at no distant day and the wool-growing industry must, in the natural course of things, be relegated to those parts of the country, such as Arizona, New Mexico, Nevada, and Wyoming, which offer wide and uninterrupted areas for grazing purposes.

## STOCK-RAISING.

The raising of hogs, cattle, horses, and mules in Fresno County is advancing both as to numbers and as to quality in breeding. From 5,000 to 7,000 hogs are being annually shipped from this county to Honolulu. These average in weight about 150 pounds, and are fattened for the most part on alfalfa. Only for about a month immediately prior to shipment is it necessary to feed grain so as to produce the required condition for transportation. One rancher, within a few miles of Fresno City, has sown 3,000 acres to alfalfa for hogs and cattle, and this is being done in many parts of the county. Large numbers of cattle are being received continually from Arizona to be fattened and either slaughtered here or reshipped to San Francisco and elsewhere. Thus the number of beef cattle in the county is being added to as rapidly as it is diminished by the demands of the local and northern markets, and there are between 50,000 and 75,000 head always on hand. The facilities for fattening beef cattle in this section are unsurpassed, and

prices for the dressed meat or for the fattened cattle on the hoof are always good.

Gratifying results are being attained by horse-breeders who have for several years given their attention to the improvement of the blood lines in the various classes. Thoroughbred, standard-bred, and high-class draft stallions have been brought into the county, and great interest is manifested among horsemen in raising the grade of the runner, the trotter, and the work horse. Some of the best roadsters in the State are in Fresno and very promising youngsters in the running line are also attracting attention, while the production of the heavier breeds has met with equal success.

In a general mention of the varied resources of this glorious county there must be no omission of the great American mule. In this valley he finds an environment peculiarly adapted to his exacting requirements, and speedily attains the highest degree of mulish perfection. So widely has his reputation spread that Great Britain sent her agents across the sea to acquire him for use in her warfare against the Boers of South Africa. These agents are in the valley to-day buying up all the mules obtainable, and the market, always good, is especially so at this time.

#### STATISTICS.

At the end of the last fiscal year, in June, the total value of all property in the county was \$28,270,578, an increase of \$2,306,750 over the year previous. Comparisons may be made from the following figures for the years 1900 and 1901:

	1900.	1901.
Value of real estate, other than city and town lots	\$14,270,707	\$15,572,558
Improvements on same	2,313,613	2,265,186
City and town lots	3,885,746	3,667,997
Improvements on same	2,512,078	2,816,620
Personal property as per schedule	2,847,413	3,701,275
Money and solvent credits	134,271	154,292
Value of property affected by mortgages	6,999,957	6,895,348
Assessed value of trust deeds and mortgages on real estate	4,779,125	4,565,740

Acreage planted to nearly all crops shows an increase. Thus the acreage in grapevines in 1900 was 62,970; in 1901 it had increased to 67,770. In the former year Fresno County had 19,850 orange and 3,840 lemon trees in bearing. At the end of last year she had 20,740 and 3,900, respectively.

Bearing fig trees in 1900 were 31,525; at the end of last year, 32,300. Bearing olive trees in 1900 numbered 14,896; in 1901, 15,420.

Except as to corn and barley, the figures show a decrease in the grain acreage. The number of acres sown to wheat for the crop of 1900 was 145,800; in the following year it dropped to 135,700. There was a very marked advance in the acreage sown to hay, the figures being 4,850 acres for 1900, as against 13,600 in 1901.

These figures tell their own story, indicating, as above stated, a solid and healthy condition of things that ought to be matter for congratulation from every quarter.

## GLENN COUNTY.

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Glenn County is one of the youngest in the sisterhood of California counties, having been separated from Colusa by Act of the Legislature of 1891. Its area is 130,000 acres. It is bounded on the south by its parent county, Colusa, on the east by Butte, on the north by Tehama, and on the west by Trinity and Mendocino. It is one of the Sacramento Valley counties, and is located on the eastern slope of the Coast Range, on the western side of the valley, and extends from the summit of the Coast Range to the Sacramento River, these forming its natural eastern and western boundaries.

The eastern portion of the county consists of level valley lands, which change into rolling hills on the west, becoming more extensive and precipitous in the foothills of the Coast Range until they merge into the mountains.

Willows, which is the county seat, has a beautiful location in a gentle slope of the Sacramento Valley. No finer view can be presented. With its productive fields looking toward Mount Shasta to the north, the Sierra to the east, and the foothills of the valley and the Coast Range to the west, a land of loveliness and grandeur is presented to the eye.

What has been said of the climate of Colusa holds good of Glenn, there being but little difference between the two.

### SOILS.

The soil is generally of a fertile character, and ranges from a rich black loam in the bottom lands along the river to a more gravelly soil in the higher and foothill regions. The rich clay land of the western foothills has proved itself well adapted to fruit-growing, and some excellent results have been obtained. The hills surrounding the small valleys present any variety of surface, and are adapted to the culture of a great variety of vegetable products.

### IRRIGATION, AND FACILITIES THEREFOR.

During the summer of 1900 about 600 acres were irrigated by ditches from Stony Creek, about 100 acres by pumping from the Sacramento River, and about 40 acres by pumping from wells. About one third of the deciduous fruit orchards are irrigated, and all the orange and lemon. All the lands of the county are excellent for irrigation. Stony Creek is the only stream from the mountains flowing through the county to the river. In the late fall this creek furnishes but little water to the irrigators on the plains, although those in the foothill valleys along its course have water enough, as does everybody in the spring and early summer. However, a great deal of work is now being done on the lower ditches, and we expect better results hereafter. Few streams anywhere offer better facilities for the storage of water than this one does. The

Geological Survey has just completed its investigations along Stony Creek, and reports many excellent reservoir sites, three of which were carefully measured, with the following results: Briscoe reservoir, with a capacity of 14,630 acre-feet, can be constructed at a total cost of \$122,000; East Park, capacity 25,000 acre-feet, cost \$165,400; Millsite, capacity 45,750 acre-feet, cost \$698,000. This cost includes a liberal estimate for land damages.

There is an inexhaustible supply of water underground, at a depth of from 12 to 30 feet, in all parts of the valley lands. At Orland, one well, in which the water stands at 20 feet, furnishes 18,000 gallons per hour throughout the irrigating season. There are several other wells there that supply smaller pumps. The water is raised by windmill, horsepower, and gasoline engines.

#### PRODUCTS OF THE SOIL.

Farming and stock-raising are the principal industries. Fruit-growing, etc., is as yet in its infancy. Until within the last few years the whole arable section of the county was devoted to the production of wheat. This commodity being unprofitable, except on a large scale, forced the smaller farmers into diversified farming, and to-day along the river can be found many small places where a comfortable living is made from vegetables, melons, peanuts, etc. Others are engaged in dairying and stock-raising. It has been demonstrated satisfactorily that the smaller the farm the greater the profit per acre.

The river land can be purchased in small tracts at from \$25 to \$100 per acre. The Sacramento being navigable for good-sized steamers and barges all the year, the time is not far distant when this land will be held at as high prices as now prevail in Los Angeles and Riverside. Here is to be found a real paradise to the persons from the hilly or rolling lands of the East. This is the valley of Stony Creek, a stream running from south to north, just the reverse of the Sacramento River, along the whole length of the county. Along this creek can be found alfalfa patches, fine cattle, fat hogs, orchards of prunes, apricots, peaches, pears, and figs, and vineyards. Oranges are to be seen in the dooryards, but no one has made it a business.

There are some extensive stock ranges in the hills, where the land has never been disturbed by the plow. In these ranges are many fertile valleys that could be converted with little waste of energy into happy homes. This land is worth from \$4 to \$20 per acre. The irrigated land, when sold alone, brings about \$100 per acre. This land will produce at least four crops of hay each year, of two or three tons per acre, worth \$4 or \$5 in the field. It is thus not difficult to figure a profit on land at \$100 per acre.

Many persons in this section derive a handsome living from poultry. Flocks of 500 to 600 turkeys are not uncommon. Chickens are the money-makers all over the county. Eggs always bring a fair price, averaging about 25 cents a dozen. Chickens sell at from \$3 to \$6 per dozen, turkeys at about 15 cents per pound, and ducks and geese bring fair prices. This industry is particularly safe and profitable, on account of the absence of epidemics among the fowls, the mild winters and dewless summers being conducive to longevity with the fowls as well as with mankind.

Cattle, sheep, and hogs are the chief revenue producers in this portion.

The high prices prevailing for the past three years have placed several stock men in a most enviable position among financiers.

It is well to state here that there is not a farm in Glenn County not accessible to a schoolhouse, as Glenn County prides itself on good schools and good roads.

#### ANGORA GOATS.

Less than fifteen years ago the Angora goat was a rarity in Glenn County. Now between the north fork of Stony Creek and the south fork of Elder Creek, there are more than 15,000. The portion of the county devoted to their production is immediately along the base of the Coast Range, or of foothills, a country that is unfit for anything else but wild animals. The Angora is by nature fitted to climb over rocks, and in brush and rough mountainous localities to procure food where other domestic animals would not succeed in even living.

The long silky mohair is valuable for various purposes, and is coming into use more and more each year.

Angora mutton or venison is far superior to the Mexican or old American goat, and by many is considered better than sheep mutton. It has sold in the markets for the past two years at about the same price as sheep.

It is the practice of the Angora owners to keep them on the foothills for about eight months—from October to June—then move them to the summit of the mountains for about four months, during the hot season. By so doing the herds have green-growing feed the year through, and the cool climate of the higher altitudes tends to increase the length and fineness of the mohair.

This industry is a growing one, and as the Angoras are located where the land without them would be a total waste, it is greatly to the advantage of the county. There is room for many more as soon as they can be procured. The demand for stock goats is greater than the supply at present.



## HUMBOLDT COUNTY.

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Humboldt County extends from the 40th parallel of latitude, which is its southern limit, to about midway between the 41st and the 42d parallels, where it adjoins Del Norte County, and is with this one exception the most northerly county of California. Its boundaries are Del Norte on the north, Siskiyou on the northeast, Trinity on the east, Mendocino on the south, and the Pacific Ocean on the west, where the sinuosities of the coast-line extend some 175 miles. From north to south the county extends 108 miles, while in width it averages about 40 miles. It contains 3,590 square miles, or 2,297,600 acres of land. A good idea of its size may be had when it is stated that it is over one half the size of Massachusetts, and somewhat less than the State of Connecticut.

This area may be subdivided into the following classes: Timber land, 938,000 acres; agricultural land, 450,000 acres; grazing land, 500,000 acres; marsh land, 31,285 acres; mineral land, 125,000 acres; and unclassified lands, 253,315 acres.

### TOPOGRAPHY.

The topographical features of Humboldt are varied and picturesque. The surface is extremely rugged, numerous spurs of the Coast Range intersecting the county in all directions, rising in many places to absolute grandeur.

Besides a number of smaller streams, the county is drained by two rivers of importance. Entering at the extreme northeastern corner, the Klamath traverses it for about 30 miles in a southwesterly direction, and there being joined by the Trinity, flows northwesterly 45 miles, and empties its waters into the Pacific Ocean just north of the county line. Entering the county at its eastern line, the Trinity flows about 30 miles and joins the Klamath, a river carrying a vast volume of water to the ocean. Among the minor streams are Mattole, Bear, Elk, Redwood, Little, and Mad Rivers, and Redwood Creek. Second to the Klamath is Eel River, navigable for small craft, such as scows, flat-boats, and small steamers. All these flow in a northwesterly direction, and are separated from each other by a high hill country.

Of the topography of the Klamath River country, the Humboldt "Standard" gives the following description:

"The Klamath is the second largest river in the State. This stream reverses the physical conditions which characterize the Sacramento. The latter stream takes its rise amidst the alpine surroundings of the Sierra Nevada, flowing from its snowy eyrie with great force and volume. Below Shasta it meanders through valleys of extensive width, great depth of soil, and marvelous fertility to San Pablo Bay; whereas, the Klamath takes its rise amidst a vast expanse of levels, consisting of lakes, swamps, and tules—all this lacustrine region being remarkably fertile when reclaimed—until, entering the rocky embrasure to the Coast Range, it

rushes on through these defiles tumultuously to the ocean. On the south this condition is again reversed, through its tributary, the Trinity, this river flowing from the rocky defiles almost from the foot of Mount Shasta. If we could be suspended over the river in a balloon, we would find the outline of the stream fan-shaped, with its periphery extended between Shasta County in our State and Lake County in Oregon, 300 miles in width, running down to a point at Weitchpec, using the river from that point to the ocean as a handle. Its tributaries, the Trinity, Salmon, and Scott rivers, all flowing from the eastward, pour their annual floods into the parent stream, and, owing to the great elevation of their surrounding mountains, which reach a height of 6,000 and 8,000 feet, covered through the winter months to great depths with snow, which, under the hot sun and heated air, pour forth their aqueous tribute till the month of April, when these floods are usually at their height, these annual floods surpass anything in the State. It drains the waters of seven counties: Humboldt, Del Norte, Trinity, Shasta, and Siskiyou, in California, and Jackson and Lake counties, in Oregon. Its course, from its source, is west-southwest from Klamath Lake, and afterward southwest, making a sharp bend at Weitchpec, then north-northwest to the Pacific Ocean, where it is a mile wide at the mouth. The length of the river proper is about 250 miles; including the large tributaries, about 1,000 miles. It enters the ocean at about  $41^{\circ} 30'$  north latitude, and the estuary can be easily distinguished for many miles at sea. Nowhere in the State can be found such testimony of that ancient geological period when this continent was submerged. This channel has been cut through by the silent and persistent erosion of the waters, until it has acquired a depth of 400 or 500 feet. In many places this channel was miles in width, notably at Orleans Bar, where it must have been many miles."

#### CLIMATE.

On the coast the temperature of Humboldt County is uniformly cool and pleasant, ranging from about  $56^{\circ}$  in the summer, to  $45^{\circ}$  in the winter. The heat increases after leaving the coast-line, the thermometer ranging from  $52^{\circ}$  to  $100^{\circ}$ , according to season. Freezing point is but rarely reached in the valleys during the winter, and it never snows except in the higher valleys and near the heads of streams. Snow falls every winter on the elevations back of the timber belt, and sometimes to the depth of several feet; it seldom lies, however, for more than a week or two at most. It has been said, and truly, that any variety of desirable climate is to be had in the valleys of Humboldt County, on her low, rolling, or high hills, or on her coast. It is warmer in winter and cooler in summer than in the heated valleys of the interior.

#### SOILS.

The soil of the bottom lands and on the hills next the coast is black; that on the bottoms is of a sedimentary composition and somewhat argillaceous, while that on the hills rules more of a sandy loam. The soil on the interior hills is composed of disintegrated rock, mixed with organic matter and decayed vegetation.

Humboldt needs no irrigation. The annual rainfall averages 46 inches, and crops have never been known to fail for want of moisture.

The capabilities of Humboldt County as a dairying and fruit-growing section are very great, and there can be scarcely a doubt that these industries are destined to assume much greater proportions in the future than they have in the past, or than they do at the present time.

### FRUIT-GROWING.

Fruits of all kinds do well, particularly apples, pears, prunes, peaches, cherries, apricots, and berries. Strawberries and raspberries grow in abundance, and a small area of land in these fruits, well cultivated, will bring an immense return for the labor expended. In the vicinity of Eureka two crops of strawberries are produced per year, of fine flavor and great size. Raspberries bear from June to September, and even in December and January fine raspberries are found on the bushes grown in the valleys.

The yield of all kinds of fruit is generous, and in many instances prodigious, the limbs of apple, plum, and prune trees literally groaning under the weight of the fruit they often bear. Eel River Valley has, for a long time, been one of the finest sections of the coast for the production of apples. It would seem that the soil had been "made on purpose" to bring forth fruit of the most delicate flavor and juiciness, while the climate, neither too hot nor too cold, has doubtless much to do with the result.

In the Klamath River country climate and soil are well adapted to horticultural pursuits. Peaches are grown here as large as a teacup, and of the most luscious flavor. They can not be carried to any market, as they have to be packed on animals, and, from the tenderness of their flesh, are unable to withstand this rough transit. The grapes grown here are of fine flavor and firm flesh. The varieties for table use are particularly good, and the wine made from the wine grape of good body and flavor.

The principal fruit sections of the county are Camp Grant, McDarmid, Rohnerville, Blocksburg, Upper Mattole, Arcata, Bottom, Eel River Valley, Garberville, and Phillipsville. All these sections are adapted to the apple, but peaches, prunes, pears, and many other varieties of deciduous fruits do well, while for berries the conditions seem perfectly adapted. There was a considerable acreage of new land set to fruit this year, but owing to the distance from market there is not the consideration paid to fruit-growing in Humboldt County that it deserves.

Humboldt County excels in apples, and of these the favorite varieties are Rome Beauty, Lawver, Stark, Wagner, Arkansas Pippin, Ben Davis, and the Bellflower. These find a ready market, being shipped to San Francisco by steamer.

### DAIRYING.

In dairy products, Humboldt is one of the leading counties of the State, and produces more creamery butter than any other county. It has thirty-two creameries and a large number of skimming stations located throughout the county; its exports of butter alone for 1901 were very close to 4,500,000 pounds. Large quantities of high-grade cheese are also manufactured, and there is in operation a condensed-milk factory.

## LIVESTOCK.

After lumber and dairy products, cattle, sheep, and wool are the most valuable productions. The annual sales of beef cattle are about 8,500 head; of hogs, 10,000; and of sheep, 10,000. The shipments of wool range from 600,000 to 1,000,000 pounds per year.

## AGRICULTURAL INTERESTS.

The agricultural interests of Humboldt are varied; although making no pretensions to being a grain county, it raises abundant crops of oats, barley, hay, potatoes, peas, beans, and other agricultural products, as shown by table of shipments below, furnished by J. F. Thompson, editor of the "Humboldt Standard."

## PRODUCE SHIPMENTS.

As shown by the records of the "Humboldt Standard," the exports of county produce for 1900 as compared with those for the preceding nine years were as follows:

Year.	Butter.	Fish.	Apples.	Wool.
	<i>lbs.</i>	<i>lbs.</i>	<i>boxes.</i>	<i>lbs.</i>
1891 .....	1,496,495	2,101,900	-----	861,195
1892 .....	1,930,952	1,072,700	15,526	867,950
1893 .....	2,660,715	1,124,400	7,309	641,502
1894 .....	3,325,288	891,550	11,923	1,079,258
1895 .....	3,832,750	1,004,649	18,203	883,543
1896 .....	3,859,810	970,600	7,002	984,702
1897 .....	3,759,610	1,066,570	15,503	867,600
1898 .....	3,914,160	748,240	34,822	422,000
1899 .....	4,568,480	317,400	41,094	1,186,212
1900 .....	4,321,435	369,721	55,715	187,830

The comparison of the shipments of the various items in 1900 with those of the banner year, 1899, are as follows:

	1900.	1899.
<i>Animal Products—</i>		
Butter, pounds .....	4,321,435	4,568,480
Condensed milk, cases .....	9,033	10,898
Cheese, cases .....	14	16
Wool, pounds .....	187,830	1,186,212
Hides, bundles .....	1,596	1,426
Tallow, barrels .....	118	285
Glue stock, sacks .....	1,222	1,390
Veal, carcasses .....	2,885	2,553
Hogs, dressed .....	101	25
Mess beef, barrels .....	11	5
Mess pork, barrels .....	1	--
Calves' heads, sacks .....	100	137
Poultry, dozen .....	48	26
Turkeys, pounds .....	3,825	--
Eggs, cases .....	21	284
Wild game, sacks .....	11	--
Terrapin, cases .....	12	--
Frogs, cases .....	78	31
<i>Animals—</i>		
Beef cattle .....	6,604	5,624
Calves .....	2,124	1,815
Sheep .....	4,333	4,769
Hogs .....	3,459	5,137
Horses .....	7	20
Goats, Angora .....	90	--

	1900.	1899.
<i>Fish—</i>		
Fresh salmon, pounds .....	369,700	317,400
Salt salmon, pounds .....		3,200
Herring, dried, cases .....	21	--
<i>Fruit—</i>		
Apples, green, boxes .....	55,715	41,004
Apples, dried, cases .....	1,182	180
Prunes, dried, boxes .....	660	568
Prunes, dried, sacks .....	155	588
Pears, green, boxes .....	103	26
Miscellaneous, boxes .....	91	56
Berries, boxes .....	3	--
<i>Grain—</i>		
Oats, sacks .....	10,682	23,390
Barley, sacks .....	19	47
<i>Vegetables—</i>		
Potatoes, sacks .....	15,042	19,715
Peas, sacks .....	3,010	8,781
Seeds, cases .....	85	90
Lentils, sacks .....	72	29
Beans, sacks .....	48	--
Vetches, sacks .....	14	--
<i>Manufactures—</i>		
Leather, rolls .....	1,544	1,172
Leather, casks .....	2	--
Leather, sacks .....	4	--
Leather, cases .....	1	--
Leather, bales .....	3	--
Leather, crates .....	7	--
Mineral water, barrels .....	6	6
Mineral water, cases .....	121	129
Cider, barrels .....	65	155
Cider, cases .....	365	264
Vinegar, barrels .....	5	4
Indian curios, cases .....	4	--
<i>Miscellaneous—</i>		
Black sand, sacks .....	3	22
Junk, tons .....	283	29
Freight, tons .....	3,063	2,898

## THE LUMBER INDUSTRY.

The largest and finest body of redwood timber on earth is found in Humboldt. The redwood forests contain about 538,000 acres, of which 50,000 acres have been cut, leaving about 488,000 acres of standing timber. It is estimated that this timber will yield an average of 100,000 feet of lumber products to the acre, which leaves a reserve of about 49,000,000,000 feet of redwood lumber yet to be cut. At the present rate of cutting, about 200,000,000 feet per annum, it would take 240 years to exhaust this supply. Besides the redwood, there is probably half as much other timber, consisting of pine, spruce, fir, madrone, oak and laurel.

The shipments for the year 1900, domestic and foreign, consisted of the following manufactures of timber:

Lumber .....	99,038,751 feet.
Shakes .....	16,698,270 pieces.
Shingles .....	472,018 M.
Railroad ties .....	87,032 pieces.
Pickets .....	57,970 pieces.
Posts .....	56,462 pieces.
Stave bolts .....	1,640½ cords.
Piles .....	1,900 feet.
Laths .....	15 M.

There were also shipped the following forest products not properly classified as lumber:

Finishings .....	12,000 feet.
Doors .....	6,992 pieces.
Moldings .....	392 bdls.
Curtain poles .....	188 cases.
Sash .....	6 crates.
Shade sticks .....	12 cases.
Mattress frames .....	18,242 feet.
Excelsior .....	3,595 bales.
Butter boxes, new .....	531
Butter kegs, new .....	50
Butter cutters .....	3 cases.
Ship knees .....	345 pieces.
Burl .....	19 pieces.
Tanbark .....	1,500 cords.

### OTHER INDUSTRIES.

Humboldt is one of the most promising and prosperous counties in the State. With a population now estimated at over 30,000, nearly one third of whom are found in Eureka, the county supplies her own wants in the lines of agricultural products, lumber, fruit, and wool, and ships to other markets fully \$800 worth for each family of five persons.

Humboldt, aside from lumber and shingle mills, has one first-class woolen mill, three tanneries, two iron foundries, and three machine shops outside of railway machine shops. It has two shipyards, one of which has built and sent to sea more than one hundred vessels.

Humboldt has eleven steam railroads, embracing upward of 150 miles of first-class track. Five of these are passenger roads, and all, in themselves or in connection with other roads, center in Eureka.

Though most of the arable land of this county has been entered, there are yet thousands of acres of government land open for entry, some of which will provide comfortable homes to those who wish to settle upon and cultivate it. The last report of the United States General Land Office, under date of July 1, 1901, gives 546,949 acres as being vacant.

## INYO COUNTY.

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Inyo County, the third largest county in the State, has an area of 10,156 square miles, or 6,499,640 acres. Its boundaries are the State of Nevada on the east, Mono on the north, Fresno and Tulare on the west, and San Bernardino on the south. The entire territory lies east of the Sierra Nevada Mountains, the summit of which forms the western boundary of the county, extending north and south a distance of 120 miles, with a width of 60 miles.

The topography of Inyo County is more marked than that of any county in the State. Here the Sierra attains its greatest elevation and the valleys their greatest depression. It is a county of rugged and giant peaks, among which are Mount Abbott, 12,400 feet; Mount King, 14,000 feet; Mount Williamson, 14,500 feet; Mount Tyndall, 14,386 feet; Mount Whitney, 15,000; and Mount Inyo, some 15,000 feet; upon which the snow of ages forever rests, and forming a giant wall upon its west, as if to shut it out from all connection with the State of which it forms a part, marked by precipitous and sharp outlines and deep chasms, such as to render an ascent to their summits from their eastern slopes almost an impossibility. A county where, to the eastward of those peaks pointing heavenward, the earth's surface sinks hundreds of feet beneath the level of the sea, as in that valley, once the valley of mystery and fear, known as Death Valley—a county of beautiful and fertile plains and forbidding wastes; a county of almost arctic frosts and torrid heat.

The agricultural portion of Inyo lies along the foot of the great Sierra range, and is in the main comprised in Owens Valley, through which courses Owens River. The valley is about 95 miles in length, with a belt of arable land varying in width from 2 to 8 miles, and lies at an altitude of from 4,000 to 5,000 feet. It contains about 180,000 acres of arable land, rated from fair to good, of which about 40,000 acres are under claim. Something near 25,000 acres are under cultivation, and irrigated mostly from the numerous brooks and creeks that come down from the snowy Sierra.

The increased area of land in cultivation during the year amounts to about 2,000 acres. There are sixteen irrigating canals in the county, and one new one is in course of construction.

Wherever water can be procured for irrigation the soil of Inyo has proved to be very fertile, and very large agricultural crops are produced in Owens Valley. In many portions of the county, however, the soil is absolutely sterile, consisting of vast alkali flats, beds of salt, and sandy wastes. The celebrated Death Valley, with its vast borax lakes, is in this county.

The climate of Inyo resembles that of southern Nevada. Occasionally

light falls of snow come in the winter, but do not usually remain long on the ground. Frosts are frequent in the higher altitudes of the northern portion of the county. The annual rainfall is light, averaging at Independence from 6 to 8 inches annually.

Owens River, the chief stream, takes its water from the Sierra, and flowing a distance of 150 miles south is lost in Owens Lake. This river carries a volume of water 50 feet wide; average depth, 6 feet; flow, 5 miles an hour. Water comes running down in creeks from the mountains on the west, which afford a bountiful supply for household and irrigation.

Fruit-growing is not extensively followed in Inyo, and what is produced finds a local market. Some excellent apples are grown, and with better means of communication a profitable industry could be developed in the growth of this fruit. Peaches, pears, and grapes are also grown, and do well where properly cultivated.

There are a number of farmers in Inyo, all of whom have small orchards and vineyards, ranging from two to five acres in extent. These usually supply the demand for home consumption, and the surplus finds a market in the mines. The fruit produced is generally very excellent in quality, but the location of the county precludes it competing with the fruit counties of the State. Berries and currants do especially well in Inyo, and are very prolific.

The pasturage all along the Owens River is unsurpassed, and large numbers of cattle, sheep, and horses are raised. Apples, peaches, pears, and grapes thrive on the foothills, while wheat, corn, barley, oats, and hay are the crops raised on the lower lands.

The principal livestock industry of the county consists of the raising of cattle, horses, and mules for the Los Angeles and San Francisco markets. There are 20,000 cattle, 5,000 horses, 9,450 sheep, 1,200 hogs, and many jacks and burros on the ranges of the county. Feed is also supplied for a number of transient bands of cattle and sheep.

Alfalfa is raised on a large scale, and produces three or more cuttings of hay each season. In winter many large bands of cattle and sheep are driven into the valleys to the alfalfa fields for pasturage and fattened for the Los Angeles and other markets. This county produces corn in considerable quantities and of a superior quality, which is fed to stock and hogs; the latter bring good prices and are always in good demand.

The dairy and poultry interests are growing. There are four creameries and numerous skimming stations. The creamery product is of a very high quality, and while some is shipped to outside markets, the larger portion is consumed in the adjacent mining camps, which are the chief markets of the county.

There has been a considerable increase in the shipments of fruit, vegetables, and hay during the last year. The principal market is the new mining camp at Tonapah, Nevada.

Inyo is also celebrated as one of the banner honey-producing counties, the product of the bees, which feed upon the flower-covered foothills, being of a superior quality. Most of the product is shipped to the Chicago and New York markets, where it is in great demand.

The Southern Pacific Railroad Company has recently purchased the Carson & Colorado Railroad, which extends from the Mound House, in Nevada, to Keeler, in California, with a proposed extension to Mojave. The latter would divert the entire trade of Inyo County to Los Angeles.



The large and valuable deposits of nitrates in Death Valley will add materially to the wealth of the county. The Inyo Development Company, the only producer of soda by solar evaporation on the American continent, has lately erected a large plant to manufacture soda ash from the crude soda, evaporated from the waters of Owens Lake.

The climate of Inyo, especially that of the central and lower portions of the valley, is almost a specific for asthma, bronchitis, and pulmonary troubles. An invalid can pass the three hundred and sixty-five days in the year out of doors, and in almost all cases, when not too far gone, the county affords, with its even temperature and dry atmosphere, ideal conditions for speedy recovery.

## KERN COUNTY.

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Kern County comprises the southern part of the San Joaquin Valley and the greater part of the semi-circle of mountains which inclose it on all sides except the north. It is bounded on the north by Tulare, on the east by San Bernardino, on the south by Los Angeles and Ventura, and on the west by San Luis Obispo County. Its area embraces 8,100 square miles, or 5,184,000 acres.

The portion of the Mojave Desert embraced within the county lying east of the Sierra Nevada Mountains has an elevation of about 1,800 feet. It is only a desert by reason of the scanty rainfall and the absence of water for irrigation. The Tehachapi Pass, being a low depression between the San Joaquin Valley and the Mojave Desert, has an elevation of 5,302 feet; the Tejon Pass, 5,285 feet; and Walker's Pass, 3,964 feet.

### ARABLE LANDS.

The greater portion of the arable land of the county lies in the amphitheater formed by the Sierra Nevada and the Coast Range, joined by the San Emidio Mountains. In this area there are about 2,000 square miles, consisting of the bordering foothills and the lower portion of the valley known as the "delta"—the latter being very fertile and productive land, about 150,000 acres of which are covered by the irrigating systems. About 55,000 acres of this area are in alfalfa.

The foothills bordering the base of the mountains and sloping down to the valley have an elevation of 800 feet up, and are mostly valuable for grazing purposes. Being in the thermal belt, wherever water can be obtained, this portion of the valley is suitable for the cultivation of lemons, oranges, and other tropical fruits, beets and all kinds of vegetables for early shipment to Eastern markets.

Formerly, before the waters flowing into the valley were diverted into artificial channels and used for irrigation purposes, the overflow formed Kern and Buena Vista lakes and the swamp and overflowed lands along Buena Vista a slough to Tulare Lake. Since the development of irrigation works, these lakes and bordering swamp and overflowed lands have disappeared. Buena Vista Lake, being now limited by a system of levees, is used as a reservoir in which is stored the surplus waters of Kern River which, during flood periods, are not used in the irrigating canals. This reservoir has an area of 25,000 acres, and has a holding capacity of fifty billions of gallons.

### IRRIGATION—WATER-SUPPLY.

There is a very elaborate and well-constructed system of irrigation, by means of which all of the water, except in flood periods, is diverted upon the agricultural lands, with profitable and satisfactory results.

Upon this system of canals and distributaries has been expended, in

construction, about five millions of dollars. It consists of over 1,100 miles of laterals and 300 miles of main canals—these main canals varying from 10 to 32 miles in length, and from 10 to 80 feet in width on the bottom, with capacities varying from 20 to 900 cubic feet per second.

The Kern Valley Water Company's canal, used as a wasteway in flood periods, leading through the low lands toward Tulare Lake, is 175 feet in width, and has a capacity of about 6,000 cubic feet per second. The canal leading into the reservoir is 4,000 feet in width, with a capacity of 6,000 feet per second.

The only resource in water, worth mentioning, in this county, is Kern River, which rises among the highest peaks of the Sierra Nevada Mountains, in the northeastern part of Tulare County. This river flows through 35 miles of one of the grandest cañons of the Sierras. It enters the valley a few miles above the city of Bakersfield, and has a catchment area of 2,383 square miles. The river has a mean discharge of about 900 feet, and a discharge of about 3,000 feet during the principal irrigating season, from the 1st of May to the 20th of July.

In the lower portion of the valley artesian water is obtained at a depth of from 300 to 900 feet. In some localities the wells discharge as high as 5 cubic feet per second. In other localities only a small flow can be obtained. What is known as the "Artesian Belt" covers about 100,000 acres.

In all portions of the delta lands, and in some localities in the high lands, an abundant supply of surface water can be had at a depth of from 12 to 40 feet. By means of cheap power this water can be raised to the surface for irrigation at a trifling cost.

The irrigation systems in use are now supplemented by wells and pumping plants operated by means of the power generated in Kern River cañon, and transmitted by electricity. These pumping plants are capable of raising 100 cubic feet of water per second, demonstrating the possibilities of successful irrigation by means of wells where cheap power can be obtained.

The irrigated portion of the valley is adapted to the production of a great variety of fruit, all kinds of cereals, and particularly to the growth of alfalfa, or "lucern," which produces as high as fourteen tons of hay per acre in one season. Alfalfa, as a forage plant, is unsurpassed, and will grow continuously without reseeding for fifteen years. It will maintain two cows to the acre.

#### HORTICULTURE.

Kern County sends out to market apricots, peaches, pears, plums, prunes, nectarines, apples, quinces, pomegranates, olives, figs, grapes, raisins, almonds, English walnuts, oranges, lemons, and all kinds of berries and melons; celery, asparagus, cabbage, cauliflower, sugar-beets, potatoes, corn, pumpkins, and all other vegetables of whatever variety.

The oranges and lemons raised in Kern County are superior to any produced elsewhere in the State, and mature several weeks earlier than the oranges of Los Angeles County.

Scale is entirely unknown in this county. There is much unoccupied

orange, fruit, and vegetable land available at a low price and on easy terms.

There are many mountain valleys where cereals are produced without the aid of irrigation, and well adapted to the raising of the hardier kinds of fruit, which always finds a ready market at remunerative prices. These mountain valleys furnish homes to a great number of people, who utilize the mountain lands for grazing and dairying purposes.

Kern is rapidly taking a front place among the fruit counties of the State. She is especially favored for this purpose in soil and climate, and a great many landowners are already making plans for setting out large tracts to orchard the coming season. It is therefore probable that the present season's record will be greatly exceeded in the very near future.

#### STATISTICS.

Kern County has a population of 18,000. Assessed acreage, 2,793,605 acres. Total assessed valuation, \$21,000,000. The present tax rate is \$1.50 per \$100.

#### PRECIOUS METALS.

Kern County has extensive and valuable mineral resources, producing borax, mica, copper, gold, silver, lead, antimony, iron, sulphur, Fuller's earth, lime, gypsum, and petroleum. In the Mojave Desert, in this county, are some of the most productive gold mines in the State, there being producing mines in Randsburg, Roderick, Goler, and Summit mining districts—all situated in the Mojave Desert, within the boundaries of Kern County.

On Greenhorn Mountain, and in the vicinity of Kernville, are many producing gold mines, and many very promising mines awaiting development, with indications that discoveries of valuable deposits of gold and silver will be made from time to time.

#### OIL-FIELDS.

New discoveries are daily being made, enlarging the area of the proven oil-producing territory.

The daily shipment of oil from the Kern River, McKittrick, and Sunset fields amounts to about 5,000 barrels, produced from wells which yield from 50 to 400 barrels a day. There are many wells which flow continuously. The oil territory is so large that it is not probable that the demand for the oil will equal the possible production within a period of fifty years, making it certain that for a long period of time Kern County will have the cheapest fuel and the cheapest power of any place west of the Rocky Mountains. At prices at which fuel oil is likely to rule, power can be produced at a rate less than a half cent per horsepower per hour.

The possibilities suggested by this state of facts must be left to the imagination.

In the history of Kern County the year 1901 has been remarkable, witnessing a hitherto unknown development, a fact due chiefly to the immense fields of oil discovered a short time previously.

A total of 198 wells has been drilled in the Kern River district, and an increased output, which would be still larger were it not for a car

shortage, is recorded. The shipments for November were 2,460 carloads. In the opinion of well-informed operators, the greatest possible yield of the district is fully fifty per cent above the latest figures.

Some twenty miles of pipe-line have been laid by the Standard Company alone in this field, and probably an equal length by operating companies. These latter have all increased their storage facilities, and the Standard has erected, and is erecting, thirty-five tanks, with a capacity of 35,000 barrels each. Kern River field improvements for 1901 amount to about \$1,500,000.

In addition, the Union Oil Company has begun the foundations of a refinery, which will have a capacity of 1,800 barrels daily. The Pacific Refinery in Bakersfield is about completed, at a cost of \$50,000. It contains three 600-barrel stills, and will be in operation as soon as a pipe-line can be run from the wells.

The McKittrick oil-field has increased the number of its wells during 1901 to the extent of twenty-nine, not counting the failures. The town of McKittrick has grown with the oil development, and is twice its size of a year ago.

The Midway oil-field has a history confined to the past year. Last March the first strike was made, and four wells have since been completed. The Canfield & Chanslor water-pipe-line has been finished, at a cost of \$50,000, and the one great drawback to speedy development has been removed.

The Sunset oil-field contains forty-nine wells, two thirds of which were drilled during 1901. A railroad, the Sunset, has been built, connecting the district with the Southern Pacific's branch line to McKittrick at Gosford. It is forty-two miles in length, and its reported cost was \$500,000.

#### RAILROADS.

There are two transcontinental railroads passing through the county, with branch roads running to the Sunset and McKittrick oil-fields.

#### ELECTRICITY.

The power plant located at the mouth of Kern River cañon, operated by the Power Development Company, is one of the best equipped and most reliable installations of the kind in the world. It furnishes light and power to the city of Bakersfield, and to many pumping plants in the outlying country.

There are other power plants being installed to utilize the water power available in Kern River cañon, which will furnish 18,000 horsepower, and other schemes are in process of development to make available almost unlimited power in the falling waters of Kern River.

#### THE CITY OF BAKERSFIELD.

Bakersfield, the county seat, and distributing point for the county, is a prosperous and growing city of 8,000 inhabitants, with public library, twelve churches, four school buildings, opera-house, oil exchange, and many finely equipped halls and meeting-places of various fraternal societies. There are four banks, five newspapers, steam laundries, foundries, machine shops, planing-mills, tank factories, packing-houses,

flouring-mills, refineries, oil plant, gas and electric-light plant, and fine county buildings, with many structures in contemplation. There is a system of sewerage, six miles of street railway, and an elaborate water-works plant, supplying the purest and most wholesome drinking water found in the State of California.

#### CLIMATE.

The climate of Kern County is similar to that of the interior region of California—the lower valleys being quite warm in the summer time, and the higher or mountain portions furnishing any temperature that may be desired. In twenty-four hours, the trip can be made from the valley to an elevation in the mountains where there is perpetual snow.

The warm period is from the 15th of June to the 15th of September. Although the thermometer goes as high as 110° for a few days in each year, sunstroke is unknown. The dryness of the atmosphere with its cooling effect makes the heat of California less oppressive than the same temperature in the more humid atmosphere of the Eastern cities. The nights are always pleasant.

#### AGRICULTURE—DAIRYING.

Cereals are largely produced, both in the valleys and on the higher levels. Wheat-growing is the leading industry of Tehachapi. Barley, oats, hay, and rye are raised to some extent, and Indian corn is extensively cultivated in the valley, growing to an astonishing size. Alfalfa is the standard feed crop, growing on the irrigated lands with unsurpassed luxuriance, and yielding from three to seven crops a season, of two tons at each cutting to the acre.

Cattle, horses, sheep, and hogs can be pastured with profit during the entire year on alfalfa. Either green or cured for hay, the nutritive qualities of alfalfa are surpassed by few other plants, red clover not exceeding it in protein or muscle-forming elements. Farm animals of all kinds relish and thrive, and in many instances actually become quite fat, upon the dry hay alone, and cows kept upon it demonstrate its value for milk-making in both quantity and quality of product. A proper stand of alfalfa furnishes a great quantity of extremely valuable and much-relished pasturage for swine and horses during a large part of the year.

Among the most profitable industries of the county is the dairy business. The climate is so mild that cattle can be kept out of doors all the time, and by breeding at the right season the cows can be made to give plenty of milk at the time of year when butter is highest. There is no portion of the State of California that has greater possibilities for becoming the greatest dairy district in the United States than that portion of Kern County located in what is termed the Kern Delta.

The following are close estimates of the number of acres of the different cereals sown for the year 1901 :

	Acres.
Wheat .....	100,000
Oats .....	1,500
Barley .....	35,000
Corn .....	2,000
Hay .....	35,000

The rich, irrigated soils are well adapted to hops, tomatoes, melons, and all varieties of vegetables.

## STOCK-RAISING.

Stock ranks, in Kern, among the greatest sources of wealth. Thousands of head of stock are raised on the rank feed of the plains. In addition to this, there is a large extent of natural range. The best blooded stock is found in this county.

The Antrim Stock Farm of Charles Kerr is devoted entirely to the raising of thoroughbred horses.

Henry Miller, the leading cattle king of the Coast, is one of the largest landed proprietors of the county. He numbers his stock of all kinds up in the thousands.

The Kern County Land Company raises all classes of livestock on a very extensive scale.

The poultry industry, while yet in its infancy, promises to become one of the leading and most remunerative ones of the county.

Raising of swine of pure breeds is profitably and extensively carried on.

The assessment roll of the county shows \$14,000,000 worth of property, and gives the number of cattle as 65,000; hogs, 25,000; sheep and lambs, 1,000,000; Angora goats, 90,000.

## TIMBER.

Aside from the heavy growth of oak in the foothills, useful for fuel, there are in the mountains large forests of pine, cedar, fir, spruce, and hemlock, extending the entire length of the county, and several saw-mills are at work among them.

## KINGS COUNTY.

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Kings County, adjoining Fresno, is the youngest in the California sisterhood of counties, having severed from the mother county, Tulare, in 1893.

Practically the whole of Kings County is level land; the southwest corner barely touching the mountains. The center is taken up by Tulare Lake, which is nearly dried out, but at no time was it anything more than a shallow slough or sink, though there is a story that once upon a time a flat-bottomed steamer navigated its waters. The land made by the retreating of the water is not adapted to all uses, as it contains alkali, washed out of the surrounding territory by the many rivers and channels of rivers and main irrigating ditches with which the country is threaded.

The county has an area of 1,267 square miles, or 810,880 acres. Of this 612,522 acres are on the assessment roll, the valuation of the county being \$7,500,000. Its population is about 10,000, of whom about one-third lives in the chief town, the county seat, Hanford.

With the exception of the old lake bottom, Kings County land is adapted to all forms of agriculture, and the district affords one of the striking illustrations of intensified farming.

The first settlers of the "Mussel Slough District," as the region along the Kings River slough was called, were farming people from the Middle-Western and Southern States, who came in emigrant wagons without capital. They selected these lands because the soil was rich and deep, and because plenty of water was obtainable for irrigation. There was no great corporation to construct an irrigation system for them, so they went to work with shovels and picks and built their canals and ditches. As a result, they own the water, and have no interest to meet. The cost of maintenance is light, averaging under 30 cents per acre per year.

The pioneer settlers are well-to-do, and hundreds of others who have come since the beginning, people of small means, or of no means at all, have earned places for themselves, from which they derive a steady, comfortable income. There are no very rich men, and no poverty class.

Another feature of the situation in Kings County, making it the more valuable as an illustration of intensified farming, is the variety of products. There are many sections of the State where a community enjoys a large income from one product, such as oranges or raisins, for example, but in Kings the farming is of a general character, and includes twenty or thirty different items.

The soil is alluvial in character, having been washed down for countless centuries by the Kings River and the slough, and deposited in fine silt, on which vegetation sprang up and decayed and then was buried under the wash. It is sandy and porous in quality, enabling the horticulturist to practice a form of irrigation that is rarely used. This is irrigation by seepage. Instead of flooding the land, the water is allowed to pass through it in ditches from one fourth to one half mile apart. This practice is less expensive and, where it is practicable, takes the



place of fertilization and of deep plowing. As the soil is practically unlimited in its depth (for wells sunk to a depth of 1,000 feet show no variation in its make-up), there is no reason why this process should not be continued indefinitely.

The products of this county are fruits, green and dried; wheat, barley, corn, sugar cane, hay, alfalfa hay and seed, wine, livestock of all domestic kinds, cheese, butter, eggs, poultry, and petroleum.

The chief exports are grain, including wheat, barley, and corn, alfalfa, livestock of all kinds, wool, raisins (the annual export is nearly 400 carloads), prunes (there is one orchard of 750 acres), peaches, apricots, pears, apples, table and wine grapes, dairy products, nectarines, cherries, figs, almonds, wine, canned goods, vegetables. There is no county that produces such quantity and variety of material for export in proportion to the number of people.

The past year has been one of great progress, the dairy interests having taken the lead among the agriculturists. There are at present fully a dozen creameries doing a good business in the county, a majority of which have been established during the past two years. The Hanford cheese manufactory is one of the oldest dairy interests here, and it is flourishing, having never failed to pay a good dividend to the stockholders during the past twelve years, and its patronage extends from Riverside to Marysville.

There have been more farmhouses erected in Kings County during the past year than at any other time in the previous history, and the character of the buildings is modern. In the city of Hanford, upward of three hundred modern residence buildings have been erected during the past year.

The report of the Health Officer of this county shows a remarkably low death-rate for the past eight years, the average being but seven deaths per year per thousand population.

The business of the county is good; there is seldom a foreclosure for debt; there are very few criminal cases to require the attention of the court, and the county jail is practically empty. Immigration is brisk, and the county is being rapidly filled with a desirable class of people from the East.

Exports for the past year will reach approximately: Green fruits, 200 carloads; dried fruits, 2,200 carloads; canned fruits, 300 carloads; wine and brandy, 100 carloads; livestock, 1,800 carloads; 225 carloads of raisins, and 2,000 carloads of hay.

Kings County's population is increasing at a rapid rate, the population of Hanford, the county seat, having quadrupled during the past ten years. It now has a population of 3,500, and is a city with four banks, two daily and two weekly newspapers; a grammar school of sixteen departments; two railroad lines; a high school, having 250 pupils enrolled; electric light and power plant; a complete sewer system; a complete water system; free United States mail delivery; a business portion all built of brick made at home; a creamery plant; a cheese factory; a large fruit cannery, and one of the largest wineries in the State; a fine opera-house and all the necessary accommodations for seventeen secret and fraternal orders; fifteen churches; a public reading-room; foundry; machine shops, and several of the largest fruit-packing houses in the State. These industries are accompanied by the necessary adjuncts usually found in the liveliest communities.

## LAKE COUNTY.

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Lake County, which, on account of its scenic beauties, is named the Switzerland of America, lies about 100 miles north of San Francisco. Its boundaries are Napa on the south, Yolo and Colusa on the east, Mendocino and Glenn on the north, and Mendocino and Sonoma on the west. The county is about 75 miles long and 25 miles in width, and lies between two broken ridges of mountains, the Macayamas on the west, and the Coast Range, locally known as the Bear Mountains, on the east. It has an area of 1,078 square miles, or 689,920 acres, of which the larger part is mountainous. At the southern extremity is Mount St. Helena, at the northern Mount Hull, while in the center is located Clear Lake, a magnificent body of water 25 miles in length and 6 miles in width. It is from this that the county takes its name. This lake is situated at an elevation of 1,350 feet above the sea; the eastern shore is skirted by high mountains, but not abrupt, while at the center, on the western shore, it is almost divided into two lakes by Mount Konocti, or, as it is commonly known, "Uncle Sam," which rises out of the bosom of the lake to a height of 1,500 feet.

### TOPOGRAPHY.

While Lake is a mountainous county, there are, nevertheless, a number of fertile valleys found ensconced among its hills. Some of these are of considerable extent and very fertile. Big Valley, which lies on the southwest shore of Clear Lake, comprises within its area 2,500 acres of first-class valley land, capable of producing all classes of agricultural and horticultural crops. The valley is well watered by three streams which pass through it, namely, Kelsey Creek, Cold Creek, and Adobe Creek. All of these streams take their rise in the mountains, pass through the valley and empty into the lake. Scott Valley lies along Scott Creek, in the center of the county, west of the lake, and contains about 7,000 acres of very rich land. Contiguous to the valley is also a large area of fine foothill land. Artesian water can be had anywhere in the valley at depths of 80 to 100 feet. Bachelor Valley, which lies north and west of the lake, contains about 3,000 acres of land, and is surrounded by low, open hills. Upper Lake Valley lies at the extreme north end of the lake, and embraces some of the best quality of land, much of which is under cultivation. Lower Lake Valley is at the south end of the lake, and is formed by the junction of Copsey and Seigler Creek valleys, forming a large and fertile tract. On the foothills surrounding this valley are found the largest and finest vineyards in the county. Coyote Valley, in the southern portion of the county, contains 15,000 to 20,000 acres of fine land, and is formed by the junction of St. Helena and Putah creeks. On the same creeks lies Loconoma Valley, separated from Coyote Valley only by a low range of hills, and being virtually a con-

tinuation of the same. Here are found some of the finest orchards and vineyards in the county. Burns Valley is small, but romantic and productive, and contains some beautiful residences. Cobb Valley is formed by the upper waters of Kelsey Creek, which takes its rise in Cobb Mountain. Besides these there are a number of smaller valleys, including the Capay, Clover, Donovan, Gravelly, High, Irwin, Jericho, Jerusalem, Long, Morgan, Paradise, Rice, The Twin, and others, all containing fertile land, capable of cultivation and heavy production.

#### CLIMATE.

The great charm of Lake County is its climate. The winters are never severely cold nor the summers oppressively hot. From November to April much rain usually falls, and ice occasionally forms in some places, but during this period there are days and weeks at a time when the sun shines brightly and the weather is perfectly delightful. Flowers usually bloom all winter, which is sufficient evidence of mildness.

From May until November the weather is always fine. But little rain falls, and though the summer days are warm they are not often sultry. A gentle breeze nearly always springs up in the afternoon, and though the evenings are sufficiently pleasant for one to sit out of doors until bedtime, the nights are usually cool enough to make a light blanket or quilt comfortable as a bed covering. Fogs are rare, and chilling winds almost unknown.

#### SOILS.

The valley soil of Lake County in general is a very rich alluvium of great depth and rare fertility. In the hills there is a larger admixture of gravel, but here in many cases the soil is from 10 to 12 feet deep and very retentive of moisture, rendering irrigation unnecessary.

#### CULTURAL PRODUCTS.

The resources of this county are mostly derived from the crops of wheat, barley, oats, corn, hops, hemp, and potatoes; from fruit, from sheep, goats, and hogs, and from the pineries and quicksilver mines. Wine-making is becoming an important industry, wineries being established at Lower Lake, Middletown, and on the northwest shore of Clear Lake. The best fruit lands are in the foothills. They are well watered, but as there is a sufficient rainfall to insure good crops no irrigation is necessary. All kinds of fruit do exceedingly well, especially the apple, pear, peach, apricot, plum, and prune. The Newtown Pippin apple, prized so much in the Eastern States and exported largely to England, grows to great perfection; pears likewise, the Bartlett pears from Lake County commanding a very high price in the San Francisco market. Lake County, however, is behind her sister counties of California as a fruit producer, but comparatively little attention so far having been paid to this branch of industry. Her soil and climate are well adapted to fruit, and with easier means of communication with the outer world there is little question but that horticulture would soon come into prominence. The principal fruits grown are apples, pears, and prunes. The market for these is to a great extent local, although a large part of the apple crop finds its way to San Francisco.

## LIVESTOCK—DAIRYING.

The entire county offers excellent opportunities for all branches of livestock-raising, although this industry is not developed as prominently as it might be; but the outlook for a railroad, via Napa Valley, is assured in the near future, which will stimulate this industry by providing an outlet to markets.

Lake County is naturally adapted to the raising of Angora goats.

Dairying, principally for home consumption, is a profitable industry, and with railroad communication opened there is no finer field in California for this industry.

## OTHER RESOURCES.

The timber resources of the county are extensive. There are large bodies of sugar pine, yellow pine, fir, cedar, and oak, practically as yet untouched.

Quicksilver is the leading mining industry of the county, although gold, silver, copper, and other minerals are known to exist.

Lake County has a large number of health resorts and mineral springs, among them being the celebrated Bartlett Springs, Allen Springs, Harbin Springs, and a number of others. Bottling of the waters of these springs for shipment has become quite an important industry.

## LAND VALUES.

Prices of land vary according to location. First-class improved, near towns, from \$100 to \$200 an acre; land as good, unimproved, from \$30 to \$100. In general, the man of moderate means has excellent opportunities for securing a home in this county.

The last report of the United States General Land Office gives close to 400,000 acres as vacant, describing it as mountain, grazing, and timber land.

## LASSEN COUNTY.

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Lassen County is one of the most northerly counties of California, being separated from Oregon by Modoc County. It lies on the eastern slope of the Sierra Nevada Mountains, and is bounded on the north by Modoc County, on the east by the State of Nevada, on the south by Plumas, and on the west by Shasta County. Its southern boundary is very irregular, running in a southeasterly direction from Shasta to Sierra County, making its eastern boundary on the State of Nevada 105 miles in length, while the western boundary, on Shasta County, is not more than half that extent. Its area is 4,750 square miles, or 3,040,000 acres; of this there are 375,000 acres of valley land, 325,000 acres of foothill land, and the remainder is classed as mountainous.

### TOPOGRAPHY.

The county is a succession of mountain ranges and valleys, and although in the central and eastern parts the hills seem to have been placed regardless of direction or order, the ranges have a general trend to the southeast and northwest. A ridge having an altitude of 8,200 feet, and called Diamond Mountains, makes the dividing line between Lassen and Plumas counties. Diamond Mountains form the southern side of Honey Lake Valley, which extends southeast and northwest a distance of 45 miles, with a width of about 15 miles. In the extreme northwest corner of the county lies Big Valley, a large stretch of agricultural land, extending into Modoc County and comprising in Lassen County about 75,000 acres. This valley is watered by Pitt River, Ash Creek, and several smaller streams. Long Valley lies in the extreme southeast of the county, contains for its size but little agricultural land, but is remarkable for its singular conformation. Its south side is a high and very heavily-timbered ridge, while the rise in the north is gradual and the country dry, timberless, and open. The valley is about 40 miles in length, but very narrow, having an average breadth of from 1 to 3 miles between Big and Honey Lake valleys, separated from each other and from the main valley by intervening ridges of various lengths. The last named valleys are very small, containing but few ranches, and are mostly occupied by the bodies of water from which they take their names. In the eastern-central part of Lassen County lie the Madeline Plains, a large level tract of land, and at an altitude of 5,300 feet. This plain appears to have been at one time the bed of a lake, and to have been formed to its present condition by some change of nature. It is about 35 miles long and 15 miles wide, and is covered with a dense growth of sagebrush.

## CLIMATE.

There is a great contrast in the climate of the counties east and west of the Sierra Nevada range. In the northeastern portion of California, the seasons more nearly approach those of the Eastern States, but are not so severe. In Lassen County there are heavy falls of snow in the winter months, and heavy freezes are common.

The air is bracing and tonic, being at no time oppressive. The mercury rarely goes above 85° or 90°, 75° to 80° being the more common midsummer temperature at noon. The nights are always cool, but not affording excessive contrast with the day temperature noticed in portions of California.

The rainy season occurs the same as in San Francisco, the precipitation being about the same on the mountains. The precipitation varies with the altitude and the distance eastward from the Sierra. The Sierra plateau, above described, presents no western arresting wall against the moisture-laden clouds from the ocean, and the fall of rain and snow is every heavy, especially the latter. According to United States Signal Service maps, the average is nearly double that on the highest mountains of Los Angeles and San Bernardino counties. This melting snow supplies the irrigating water in Susan River, Willow Creek, Ball's Cañon Creek, and other streams and Eagle Lake, providing permanent and liberal irrigation for a vast area.

## LEADING INDUSTRIES.

Agriculture is chiefly confined to the growing of barley, rye, wheat, oats, and potatoes, and large and certain crops are regularly secured. Alfalfa is extensively grown for hay for the winter feeding of stock; it is cut some three or four times in a season, and, under irrigation, will average six tons to the acre.

Clover, timothy, and other natural grasses grow very prolifically without irrigation.

Potatoes of a very excellent quality are grown, the yield being enormous, at times over 200 bushels to the acre.

Stock-raising is one of the leading industries. The ranges are excellent, bunch and other natural grasses furnishing plenty of feed during the summer. In winter the climate is somewhat severe and stock need shelter and feeding. Considerable stock is driven in from adjacent counties during the summer months to pasture in the mountains and smaller valleys.

The Madeline Plains are noted for their extensive and fine forage range, and horses for general purposes are chiefly raised; they are well known for their hardy and sound constitutions, being in great demand for the San Francisco and other markets and for army purposes.

Dairying is also a profitable industry, and several creameries with skimming stations are established in the valleys. The Honey Lake and other creamery butter is of a very high grade. Large quantities of butter are shipped regularly to San Francisco and other commercial points.

The apple-growing industry of the county is rapidly becoming very important and profitable. The apples grown in the county are of a very superior quality and are not excelled in flavor or keeping qualities

by any grown in the Eastern or Northern States. They find a ready market and are in demand for export. A very high grade of cider is manufactured.

The production of poultry and eggs is quite large, and considerable shipments of both are made to outside markets.

Extensive systems of irrigation, with reservoirs and canals for the distribution of water, exist in most all portions of the county, insuring at all seasons a sufficient supply of water, and many thousands of acres of heretofore arid lands have been brought under cultivation.

The N. C. & O. R. R. connects the county with the main line of the Southern Pacific Company at Reno, Nevada.

There are close to 700,000 acres of valuable timber, consisting of yellow and sugar pine, fir, cedar, etc. As in the case of many Northern California counties, the lack of railroad facilities retards many possible profitable industries of this county.

While not, properly speaking, a very prominent mining county, considerable placer and quartz mining has been done at a profit. The quartz mines at Hayden Hill have been worked at a profit and now are producing considerable ore.

The county seat is Susanville, at which is located the United States land office of the district. There are several smaller towns in the county, but on the whole it is sparsely settled, the last United States census giving the population as only 4,511.

The report of the United States General Land Office of July 1, 1901, gives the area of unappropriated and unreserved land as 2,422,932 acres, describing same as timber, grazing, desert, and mineral.

## LOS ANGELES COUNTY.

BY THE CHAMBER OF COMMERCE, LOS ANGELES.

Los Angeles County is bounded on the north by Kern, on the east by San Bernardino, on the south by Orange County and the Pacific Ocean, and on the west by Ventura County.

In wealth, population, and resources Los Angeles is the most important county in Southern California, and ranks next to San Francisco in the State.

There are two rivers in Los Angeles County, one named the Los Angeles, the other the San Gabriel. During a large part of the year these are mere dry beds of sand, what little water they contain finding its way through the porous sand to the bedrock. In the winter months they are dangerous streams. The Los Angeles River rises in the western part of the San Fernando Valley, about 12 miles northwest of the city, and flows easterly 18 miles to the Los Angeles Pass. Its stream is fed all along by springs. Two other "rivers," the Pacoima and the Tejuanga, join it in the San Fernando Valley. Turning south, it flows through the Los Angeles Pass, and on through the city. In former years its waters flowed through the southwestern part of the city, and out through the cienega district, and emptied into the ocean through La Ballona Harbor. Subsequently the river changed its course, and for years emptied its waters into the lowlands around Compton and Wilmington.

Los Angeles County embraces within its limits a great variety of scenery and climate. Within its 4,000 square miles of territory—an area almost as large as the State of Connecticut—may be found the climate and scenery of almost every part of the State, from the cool and breezy seashore to the warm inland plains and bracing mountain-tops. Of the area of the county, about four fifths is capable of cultivation, the remainder being mountainous. The shore-line is 85 miles in length. Nine tenths of the population is within 30 miles of the ocean.

The population of Los Angeles County, by the census of 1890, was 101,454. The population of the county by the census of 1900 was 170,298. The assessed valuation of property after equalization is \$103,328,904. The marvelous growth that has been made by this imperial county during the past few years may be seen from the statement that, by the census of 1880, the population was only 33,881, while the assessed valuation, in 1882, was only \$20,655,294. Thus, within the short space of twenty years, the population of the county has increased more than fivefold, and the assessed valuation of property in proportion. Great as this increase is, there are many conservative men who believe that the real growth of Los Angeles County has scarcely commenced; and the vast improvements that are provided for within the next few years warrant such a view of the future.



The chief industry of Los Angeles County is horticulture, the list of products including everything that can be grown in the State, and almost everything that can be raised in semi-tropic countries. The area of land within the county devoted to horticultural purposes is being rapidly extended, as the large tracts are subdivided and improved.

Los Angeles County is well provided with transportation facilities. A dozen lines of railroad center in Los Angeles City, tapping almost every section of the county, while coast steamships call regularly at the leading seaports.

Perhaps the most important enterprise for Los Angeles that has yet been commenced is the big breakwater now being constructed by the Federal Government at San Pedro, for which an appropriation of \$3,000,000 was made by Congress. By means of this breakwater the depth of water over the bar will be so increased as to permit ocean-going vessels to come to the wharves, and Los Angeles will then be able to compete for its share of the growing Oriental trade. Other improvements, such as drydocks, wharves, and fortifications, will follow the harbor work. Other shipping points of the county are Port Los Angeles, near Santa Monica, and Redondo.

The rapid growth of Los Angeles County is shown by the statement that during the decade between 1890 and 1900 this county made the largest growth of any county in the State, namely, 67.8 per cent, the percentage of growth of the State at large during that decade being less than 23 per cent. The prosperity enjoyed by Los Angeles County is strikingly shown by statistics of the percentage of mortgage indebtedness to real estate values. These were recently, for the State at large, 12 per cent; for Los Angeles County, 5½ per cent. The figures for Los Angeles City and San Francisco are 5½ and 11½ respectively.

#### SAN GABRIEL VALLEY.

The San Gabriel Valley, which has always been considered a choice section of Los Angeles County, has the Sierra Madre range on the north. These mountains are grand and precipitous, inclosing the valley like a wall. This valley is undoubtedly the best known of any portion of Southern California. Even before there was any "boom" here worthy of mention, lands in the valley commanded a comparatively high price. As with most attractive sections, the level-headed mission fathers discovered its advantages, and founded the San Gabriel Mission—whose church is still in good preservation—in 1771. Now three railroads traverse the valley, and the land is rapidly being transformed into a succession of small homes and thriving little cities. The valley contains 100 square miles of territory. Under the shadow of the mountains, and separated from the lower plains by symmetrical foothills, the air is dry and bracing, proving beneficial to invalids who can not bear closer proximity to the ocean.

The San Gabriel contains some of the choicest fruit land in Southern California, and is largely devoted to the raising of oranges and lemons, as well as deciduous fruits.

Pasadena, a beautiful city of over 10,000 population, is located at the foot of the Sierra Madre range, about seven miles from Los Angeles. Within twenty years Pasadena has grown from a sheep pasture to a city

of beautiful homes, with a world-wide reputation. Other settlements in the valley are Alhambra, Monrovia, Duarte, and Azusa, all of which are mainly supported by horticulture.

#### POMONA VALLEY—OTHER IMPORTANT SECTIONS.

Adjoining the San Gabriel Valley on the east is the Pomona Valley. Irrigation is cheaply supplied to this section from the San Antonio River, which comes down out of the cañon of the same name, a romantic spot, and a favorite resort for pleasure-seekers. The soil and climate of this section are peculiarly adapted to the culture of citrus fruits, which flourish here in great luxuriance. Railroad facilities are very good, and increasing, which has caused the valley to settle up rapidly. It contains a number of flourishing towns, the chief of which is Pomona, one of the most thriving cities of Southern California. For miles in every direction around Pomona extend continuous orchards of oranges, lemons, apricots, peaches, prunes, olives, and other fruit trees, a specialty being made of olive culture.

Other important sections of the county are the Los Nietos Valley, a well-watered district, noted for its corn, alfalfa, and dairy products; the stretch of country between Los Angeles City and the ocean, over which the city is destined to spread before many years; the San Fernando Valley, north of Los Angeles, in which a large amount of fine wheat is raised; and Antelope Valley, an elevated region in the northern part of the county, where land is cheap and, with water, very productive.

#### TRANSPORTATION FACILITIES.

Los Angeles enjoys railroad competition in the shape of three transcontinental lines, and work has commenced on a fourth, by way of southern Nevada and Utah, which will shorten the distance from Los Angeles to Chicago over 200 miles. This company has been organized by a syndicate of capitalists headed by Senator Clark of Montana, who have acquired the Terminal Railway as the Pacific Coast end of the new transcontinental line, which will open up to Los Angeles a section in southern Utah and Nevada that is marvelously rich in coal, iron, silver, and other minerals. The company is known as the San Pedro, Los Angeles & Salt Lake Railroad. The line of the Santa Fé system from San Francisco to Los Angeles is open. The coast line of the Southern Pacific to San Francisco by way of Santa Barbara is in operation. Altogether there are a dozen lines of railway centering in Los Angeles. The Pacific Coast Steamship Company runs vessels every few days from Los Angeles County ports to San Francisco and San Diego.

#### RAPID GROWTH OF VEGETATION.

One of the most attractive features about a home in this section is the wonderful rapidity with which vegetation of all kinds grows, so that instead of having to wait years for a new residence to assume a settled and homelike appearance, the owner only has to wait a few months until his house is surrounded with thrifty plants and climbing vines, while even some trees, as in the case of the eucalyptus, grow up to a respectable size from the seed within a year, and can be planted around

the lot while less rapidly growing trees are attaining size, thus obviating the bare, hard appearance which attaches to new residences in less favored climates, however beautiful, architecturally, the buildings may be.

### CLIMATE.

This is an "all-the-year-round" climate, pleasant in summer as well as in winter. There is none of the depressing heat or the insect pests which drive people from Florida as soon as summer commences. It is not an enervating climate, but bracing and full of electricity; a climate that makes the sick well and the strong more vigorous. The nights are cool, blankets being always needed.

Little information is to be gained from tables showing "mean average temperatures." A section which has a summer temperature of 120° and a winter temperature of 40° shows an average temperature of 80°; so also does a section which has a summer temperature of 85° and a winter temperature of 75°. The following table shows the average maximum and minimum temperature in Los Angeles for the twenty years from 1880 to 1900, the figures being furnished by the Weather Bureau of the United States:

	Max.	Min.		Max.	Min.
January .....	76°	34°	July .....	93°	52°
February .....	79	36	August .....	95	53
March .....	82	38	September .....	97	49
April .....	87	42	October .....	90	44
May .....	90	44	November .....	86	39
June .....	92	48	December .....	80	36

The lowest temperature recorded during this entire period was 28°, and during the entire period of twenty years there were only six months in which the temperature fell below the freezing point. Even on these occasions this temperature was maintained for only a limited time, generally in the early morning.

In considering the summer temperature, it should be remembered that the climate of Southern California is so free from moisture that, as stated, a temperature of 100° here is far more comfortable than one of 80° on the Atlantic coast. This is proven by the fact that farm laborers continue to work in the open fields during the hottest periods, while sunstroke is unknown.

On rare occasions during the winter months there are here and there light frosts, but never sufficient to damage mature semi-tropical trees. In the lower places, nursery stock of delicate trees and young growths are occasionally frosted, and such plants as the calla lily and banana are nipped. Again there are belts where peas, beans, tomatoes, and other vegetables grow all through the winter, while throughout the length and breadth of Los Angeles County the heliotrope, geranium, and jasmine blossoms shed their perfume from thousands of gardens in mid-winter. The constant suction of the prevailing winds from the ocean during the day and to the ocean at night, prevents the possibility of malarial conditions. In short, the climate of Los Angeles County is one that leaves a person entirely untrammelled, free to work or play in the open air almost every day in the year without having to give a thought to the weather.

Finally, it should be mentioned that the cyclones and tornadoes,

Angeles calla lilies, tuberoses, carnations, and other flowers are raised by the acre. Hundreds of acres are devoted to the cultivation of celery, which is shipped East by the trainload. Winter vegetables, such as string beans, tomatoes, green peas, and chile peppers, are shipped to the North and East during the winter months, realizing high prices.

#### DAIRYING—POULTRY-RAISING—OSTRICHES.

Until only a few years ago, most of the butter consumed in Southern California was imported from the North and East. This is no longer the case, a number of creameries having been established during the past few years, with most successful results. There is room for more.

Poultry does well in Southern California, when it is given the same attention it receives in the East. Eggs always command a good price, seldom falling below 15 cents per dozen, and running from that up to 35 cents or more.

In the line of big birds, ostriches are raised here for their plumes, and the industry is profitable. There is a large ostrich farm at South Pasadena, near Los Angeles.

#### LIVESTOCK.

Southern California is an ideal section for livestock. The horses raised here have been noted for their speed and endurance, from the time of the early Spanish settlers. Some famous thoroughbreds have been raised in Southern California, and it is the opinion of many that this section will one day rival Kentucky as a breeding-ground for fine horses.

#### GAME AND FISH.

Among the game found in Los Angeles County are wild geese, ducks, snipe, cottontail and jackrabbits, squirrels, foxes, deer, wildcats, California lions and bear, the latter being found in the northern part of the county, within 60 miles of Los Angeles City.

The angler finds plenty of trout in the mountain cañons. In the ocean there is excellent fishing, both with line and seine, and some remarkable catches are made. The yellowtail, ranging from 15 to 80 pounds in weight, is very numerous in the waters of the Pacific. The tuña attains a length of five feet or more, and a weight of from 100 pounds upward. "Jew-fish" are sometimes caught weighing 400 pounds.

#### MINERAL WEALTH.

Although Los Angeles County is chiefly noted as a horticultural section, its mineral wealth is by no means unimportant. Including petroleum, Los Angeles ranks fourth in mineral products among the counties of the State, and is the only county in California which leads in five mineral products.

Los Angeles is the center of a number of rich mineral fields in Southern California which last year yielded products to the value of about \$14,000,000. The chief of these, exclusive of petroleum and asphaltum, were gold and borax. There were also produced, in smaller quantities, silver, clay, gypsum, granite, cement, lime, and a few other mineral substances.

The chief gold camp of this section is Randsburg, in Kern County, a short distance from the Los Angeles County line. During the past five years this camp has yielded over \$5,000,000 in gold, and the production of that metal may be said to have hardly begun.

It was near the borders of Los Angeles and Ventura counties that gold was discovered in California, during the mission era, long before the discovery by Marshall at Coloma, which electrified the world. Some placer gold is still taken out in that section. Recently there have also been encouraging reports from gold quartz deposits in the Antelope Valley, in the northern part of Los Angeles County. For many years some gold and silver have been taken out in the Sierra Madre range, about 20 miles northeast of Los Angeles, but the formation there is so broken and the surface of the country is so covered with brush that prospecting is very difficult.

#### PETROLEUM.

One of the most remarkable features of development in Los Angeles County and Southern California during the past two years has been the greatly increased production of petroleum. For over twenty-five years petroleum has been produced on a limited scale in Los Angeles and Ventura counties, but it is only within the past few years since the discovery of a rich field within the city limits of Los Angeles that the industry has assumed great importance. To-day the petroleum industry of Southern California is attracting the attention of capitalists throughout the country. While development has been extended into other counties, Los Angeles still leads in the production of petroleum, having produced in 1901 nearly one third of the total product of the State, which is estimated at about 8,000,000 barrels.

The oil produced in California differs from that of the Eastern States, being of a heavier grade, with an asphaltum base, and it is used almost exclusively for fuel. It has been adopted by most of the leading factories of this section, and is used largely by the railroads. A careful test recently made with a locomotive showed that oil at \$1 a barrel is equivalent to coal at \$4 a ton.

It is evident that the development of petroleum in California is yet in its infancy. Oil is found throughout the entire length of the State, from Mexico to the Oregon line, although so far the most important and profitable development has been in and near Los Angeles County. There is every reason to believe that within a few years California will be the leading petroleum State of the Union, and that the value of the oil product will exceed that of the gold mines. Indirectly, the oil industry in Southern California has been of great benefit to Los Angeles, in stimulating manufacturing and furnishing a large amount of business to the machine shops and foundries.

#### MARKET PRICES FOR FOOD AND OTHER PRODUCTS.

There is probably no important city in the United States where most of the necessities of life are more reasonable in price than in Los Angeles. The following are normal retail prices, for an average year:

Pears, 2 to 3 cents per pound; peaches, 2 to 3 cents; plums, 2 to 3 cents; apples, 3 to 5 cents; quinces, 2 to 3 cents; grapes, 2 to 5 cents; pomegranates, 4 to 6 cents; fresh figs, 2 to 3 cents; watermelons, 5 to 15

cents each; cantaloupes, 5 to 15 cents each; lemons, 15 to 20 cents per dozen; oranges, 15 to 30 cents per dozen; guavas, 6 to 7 cents per pound; blackberries, 5 to 10 cents; strawberries, 5 to 12 cents; raspberries, 10 to 15 cents.

Potatoes, \$1.00 to \$1.50 per 100 pounds; seed potatoes, a little higher usually; squash, 2 cents per pound; string beans, 3 to 5 cents; sugar peas, 4 to 5 cents; tomatoes, 3 to 5 cents; celery, 5 cents per bunch; sweet corn, 15 cents per dozen; cucumbers, 10 cents per dozen; egg plant, 5 to 10 cents each; carrots and turnips, 2 cents per pound.

Beef: Round steak, 12½ cents per pound; chuck, 10 cents; rib, 15 cents; sirloin, 17½ cents; porterhouse, 20 cents; tenderloin, 18 cents; rib roast, 15 cents; chuck roasts, 10 cents; leg of mutton, 12½ cents; shoulder, 10 cents; chops, 15 cents; lamb, 15 to 20 cents; veal, 10 to 12½ cents; roast pork, 10 to 12½ cents.

Fish, 10 to 15 cents per pound; oysters, 50 to 60 cents per quart. Oysters are imported from the north.

Butter, 30 to 35 cents per pound; eggs, 20 to 25 cents per dozen; chickens, 50 to 75 cents; ducks, 60 to 75 cents; turkeys, 18 to 20 cents per pound; rabbits, 20 cents.

Groceries are reasonable in price. Coal oil sells at 90 cents to \$1.00 per five-gallon can; flour at \$1.15 per fifty-pound sack.

Cordwood—eucalyptus, oak, or mesquit—is worth from \$7 to \$9 per cord, and coal from \$8 to \$10 per ton. Coal oil is largely used for fuel; also a distillate, made from Los Angeles crude petroleum.

Lumber averages from \$10 to \$20 per thousand for rough pine; \$18 to \$20 for rough redwood, and \$27.50 to \$35 for surfaced redwood. Pine is generally used for building and redwood for interior finish. Houses may be built for from \$150 to \$250 per room.

### EDUCATIONAL FACILITIES.

The school facilities of Los Angeles are especially good. Besides the complete system of public schools, private schools and colleges abound in Los Angeles, Pasadena, and other towns. Many Eastern people avail themselves of the opportunity to send children with a tendency to weak lungs to a country where plenty of out-of-door exercise is a possibility every day in the year. Most of the leading religious denominations are represented, not only by scores of churches, but also by one or more religious colleges. The work of the school is further supplemented by an army of specialists in music, painting, and every department of art. The Chautauqua has an active membership of nearly a thousand, and meets annually at Long Beach. Lectures and other entertainments, by home and foreign talent, are of almost daily occurrence. The educational and social facilities afforded by Los Angeles are, in the widest sense of the word, unsurpassed. Public libraries are numerous and well stocked with the latest works.

### PROGRESS OF THE PRINCIPAL TOWNS AND LOCALITIES OF THE COUNTY DURING 1901.

*Burbank.*—Deciduous fruits of tree and vine, alfalfa, grain, and watermelons were among the chief products of the year 1901 about Burbank. Of alfalfa, for which the soil, being free from alkali, is well suited, there were about 276 acres, averaging twelve tons to the acre for the year. The alfalfa sold at from \$5.50 to \$8 per ton. There were about 800

acres of deciduous fruits in bearing, most of the fruits being apricots and peaches. Many of the peaches weighed between twelve and sixteen ounces each, and sold for 2 cents per pound. From the deciduous-fruit orchards generally the yield averaged between five and seven tons per acre, and the fruit sold for from \$14 to \$20 per ton. The crop was less than normal, but was the best in three years. About 800 tons of wheat and barley were produced on about 230 acres. The grape crop aggregated about 1,000 acres, the yield being between six and ten tons per acre. Of walnuts there was a light crop, amounting to about twenty tons, the nuts selling for about 8 cents per pound. There were about 125 acres of watermelons. From one of the best fields the melons sold for \$100 per acre. There was also a considerable production of oranges, almonds, and sweet potatoes. There are good opportunities for dairy and poultry enterprises. In one instance, \$82 was cleared from five ducks and a drake, after deducting cost of feed. According to an estimate prepared by O. W. Seastrom there have been twenty-one wells put down, within three miles of Burbank, within the past two years, yielding an aggregate of 1,000 miner's inches by pumping. The water rises naturally to a level from fourteen to twenty-eight feet below the surface. Building improvements costing about \$5,000 were made within the year. In November, 1900, the enrollment of the public school was 120. In November, 1901, the enrollment was 148.

*Tropico.*—The development of strawberry culture was one of the year's chief features about Tropico. There was scarcely a berry patch about there two years ago. Now there are sixty acres in the vicinity devoted to that small fruit, one third of the area having been planted within a year. The yield from those fields within the year amounted, approximately, to over \$20,000. The discovery that subterranean streams can be tapped in the valley at depths ranging from 125 to 300 feet has resulted in a big increase in the strawberry output. A dozen wells have been sunk near Tropico, and streams amounting each to 50 miner's inches and less are being pumped, the quantity of water produced being limited usually by the capacity of the plants rather than by the amount available. About 25 per cent of the wells have been sunk within the year. The factory of the Pacific Art Tile Manufacturing Company, which institution was recently completed, has turned out some excellent experimental work, and promises to build up an industry unique on the Pacific Coast, giving employment to hundreds of people. The shipments of fruit from the Tropico station for the year 1901 to December 10th were: Oranges, 107 carloads; lemons, 32 carloads; wine grapes, 17 carloads. For the year 1900 there were 39 carloads of oranges and 4 carloads of lemons shipped from the same depot. Figures of shipments by the Salt Lake road are not available, but they would probably amount to 125 carloads of lemons and oranges, as the fruit from some of the largest orchards is sent by that route. Much of the fruit shipped from Tropico was grown about Glendale and in other parts of the valley.

*Glendale.*—A half dozen houses were erected within the year, and a number of the unoccupied ones left vacant by the collapse of the boom found tenants. A high school was established late in the year, and has thirty pupils. A general merchandise store and a lumber yard have shown an increase of .25 per cent in their business. There were a num-

ber of wells put down. The orange orchards yielded good returns, and from about twenty acres of small fruits a handsome revenue was obtained. From a large acreage of deciduous fruits, principally apricots and peaches, there was a heavy crop. Two or more fruit-drying plants were operated during the season.

*Verdugo.*—Of the wine grapes grown in the extensive foothill vineyards about Verdugo, there was a large yield, some of which was converted into wine at the Glassell and West Glendale wineries. The balance of the crop was hauled to Los Angeles. The small vineyards of table grapes proved profitable, and the acreage planted to those varieties was increased about 25 per cent within the year. There were a number of good wells sunk, and others are to be bored.

*Eagle Rock.*—The chief products of the Eagle Rock Valley were apricots, peaches, and tomatoes. The apricot crop for the past season is estimated as having yielded to the growers a revenue of \$5,000. From about twenty-five acres of tomatoes a good crop was obtained. Most of the tomatoes were sold at the Los Angeles and Pasadena canneries, but there was a considerable quantity, grown on the southern exposure of the frostless hillsides, shipped to the Eastern markets. The water-supply of the valley comes from about fifteen wells, nearly all of which were sunk within the past two years. Their aggregate production is about 100 miner's inches.

*Fernando.*—About 215 carloads of oranges and 50 carloads of lemons were shipped from Fernando during the year. In 1900 the citrus-fruit shipments amounted to 102 carloads. The fruit grown about Fernando is free from scale or smut. A Pasadena company is about to set 450 acres northeast of Fernando to oranges, and has planted 50,000 nursery trees near Pacoima Cañon, where water is being developed. The olive crop from the 1,200-acre grove of the Los Angeles Olive Growers' Association was very heavy. There are in the grove 100,000 trees seven years old. According to an estimate made December 8th by a representative of the company, the crop, which was then only partly gathered, would amount to 1,500 tons. The company installed an oil and pickling plant at a cost of about \$10,000. McClung & Powell harvested 20,239 pounds of Mission olives from 140 trees thirteen years old. The picking cost \$15 per ton, and the olives sold for \$32 per ton. There were 3,840 tons of wheat raised about Fernando and sent away within the year. Of barley there were 625 tons, and of hay 120 tons. Scarcely any grain or hay was sent away in 1900. From 190 colonies of bees on the J. F. Lynn & Son ranch, east of Fernando, 14½ tons of honey were sold at \$110 per ton.

The Maclay Rancho Water Company is installing a water system, which assures abundant irrigation about Fernando. According to an estimate of H. J. Stocker, the chief engineer, the company has expended \$40,000 on its plant within the past year.

On the Los Angeles Farming and Milling Company's ranches there were seeded about 27,000 acres, lying in the San Fernando Valley, between Burbank and a line a few miles from Chatsworth Park. From that seeded area there were produced 202,500 sacks of wheat and barley.

*Chatsworth Park.*—The past season's yield of wheat and barley grown within 7 miles of Chatsworth Park, not including that produced on the



lands of the Los Angeles Farming and Milling Company, amounted to 50,000 sacks, according to an estimate of A. L. Phillips, most of the grain being wheat. Other products within the district were 600 tons of hay, 3 carloads of oranges, 500 tons of deciduous fruits, including 100 tons of apricots, and 30 tons of honey. The California Construction Company employs about 100 men at its quarry in getting out a part of the rock for the San Pedro breakwater. The company's Chatsworth Park payroll amounts to between \$5,000 and \$6,000 per month, and the output of rock from that quarry is about 20,000 tons per month. The tunnel which is to form a part of the Montalvo cut-off of the Southern Pacific Company's coast line, is under construction by Erickson & Peterson. The length of the tunnel, when completed, will be 7,369 feet. It will link the counties of Los Angeles and Ventura, the east end being about a mile from Chatsworth Park. Work is proceeding continuously from both ends. On December 1st the mountain had been penetrated over 2,000 feet from the east end, and over 1,500 feet from the west end. The work gives employment to about 325 men. The cost of the excavation is said to be between \$650,000 and \$700,000. The expense of timbering will also be heavy. The contractors hope to finish the work by March, 1903.

*Newhall.*—Otherwise than its oil productions, the chief sources of revenue about Newhall for the year were stock and deciduous fruit. The Newhall ranch of several thousand acres, which was formerly devoted to grain-producing, is now occupied with stock-raising. There was a large output of beef cattle within the year. The apple crop was a large one.

*Antelope Valley.*—The wheat crop of Antelope Valley, most of which crop was shipped from Lancaster, amounted to 20,000 sacks. Little wheat was raised in that district in 1900. The year's hay output amounted to 2,000 tons. A number of wells have been put down about Lancaster within the year, there being an area of six miles square where an artesian flow may be produced. The acreage of alfalfa has been largely extended where water has been developed. The almond crop was also an important item of revenue.

The year's output of beef cattle raised about Elizabeth Lake was a large one. There are in the vicinity 125 acres of apple trees ranging from six to twenty-five years old. The trees are free from pests. The vineyards cover 300 acres.

The reservoir at Harold Station, into which water is taken from Little Rock Creek, for the supplying of the Palmdale colony, is better stocked with water than it has been before since its completion, three or four years ago. The experimental sugar-beet farm at Palmdale looked well during the year, and is considered as encouraging to the prospect of the establishment of a beet-sugar factory. The Alpine Plaster and Cement Company established its plant at Palmdale within the year, and it is now in operation there.

Between 15 and 20 tons of almonds of the past year's crop were shipped from Manzanita. The almonds from that ranch took the premium at the Atlanta fair. From the apple orchards, covering about one hundred acres of trees, from three to twenty years old, a good yield was obtained.

*Pasadena.*—Municipally the year has seen Pasadena develop from a city of the sixth class to one with a special charter. This charter and the city's progressive Mayor and Council have enabled the people to procure, by an overwhelming vote, \$300,000 bonds for public improvements, including parks, new city hall and jail, better streets, increased sewer system and municipal water experiment. The city has these improvements well under way.

The census of 1900, the last one taken, gives Pasadena and suburbs 9,117 inhabitants. The secretary of the Board of Trade, who made last year's school census, is certain that there are many more people here now than then, because at that time hundreds of houses for rent could be found, while now it is very difficult for newcomers to rent houses.

The Pasadena Ice Company's plant, a mile south of the business section, near the Santa Fé Railroad tracks, is the only new manufacturing establishment built during the year. It has an output of 15 tons of artificial ice daily. The Pasadena Novelty Works absorbed the Wakeley Novelty Works, and manufactures quantities of Southern California souvenirs.

As Pasadena is preëminently a city of homes, the fruit industry is maintained principally in the outskirts. During the season of 1900 the Pasadena Orange Growers' Association shipped 82 carloads, and 106 carloads during 1901. The Earl Fruit Company shipped about a like amount. One hundred and six carloads of oranges and lemons, and 16 cars of dried fruit were shipped by the Pasadena Deciduous Fruit Association. Numerous small shipments were made. The Pasadena Packing Company enlarged and improved its facilities, and could scarcely find help enough to handle fruit at its cannery.

*Pasadena Suburbs.*—San Gabriel township, including the settlements of Alhambra and San Gabriel, in which a number of wealthy people have made their homes, has a population of about 2,400 people, according to the last census. There is somewhat of a boom in real estate in this section, owing to the projected electric railway connecting with Los Angeles and Pasadena. A subsidy of \$10,000 was raised by citizens to secure this accommodation, and the company has promised that within two months the cars will be running. More real estate has changed hands during the past few months, since this project was fairly started, than during the whole previous year. About 1,200 carloads of oranges and lemons were shipped during the year.

South Pasadena has a population, according to the last census, of 1,001. The municipality has devoted its attention to the improvement of streets and to electric lighting, until it heads the list of small towns in this respect. Fruits are taken to Alhambra for shipment, but a local packing-house is now projected. South Pasadena's principal industry, the ostrich farm, is the largest in the world. It has just been doubled in size, and now has one hundred and fifty birds.

*Pomona.*—Pomona, the center of an increasingly rich agricultural section, now numbers about 6,500 people, the school census for 1901 showing 1,572 pupils. Four new brick business blocks have just been completed, aggregating over \$50,000, and numerous substantial dwellings have been erected, so that the assessed property valuation of the city is now \$2,250,000. Numerous citrus groves have been recently purchased by new arrivals, who have come to make their home here,

and a considerable acreage has been planted to orange trees. The Irrigation Company of Pomona has just installed a \$30,000 pumping plant. The estimate of this season's orange output for Pomona Valley is 1,500 carloads. The Board of Trade (J. Albert Dole, president, and C. B. Messenger, secretary) now has a membership of 300, and is doing excellent work for city improvement.

*Glendora.*—The palm for having packed and shipped the first carload of Navel oranges from California this season is claimed by Glendora. This shipment was made on October 17th by the A. C. G. Fruit Exchange, which organization packed a total of fifty carloads for the holiday trade. The Fay Fruit Company and A. Gregory have each just completed commodious combination orange and lemon packing-houses on the line of the Santa Fé. The total average crop is estimated at 400 cars. The excellent developments of the Glendora Water Company have furnished an abundance of water in this foothill locality, and irrigation is no longer a serious question for the rancher. The population is placed at 800, there being over 180 school children. There are now no vacant houses, and the Glendora Hotel has been reopened this winter to supply a growing need.

*Covina* was incorporated last July. The orange crop is figured at 1,200 carloads. Two new orange packing-houses have just been completed—one for the Spruance Fruit Company and one for the J. S. Kuns Fruit Company.

*Azusa.*—Adjoining Glendora on the west is Azusa, which estimates its present population at 1,400. The school attendance has grown to such an extent during the past year that the present accommodations are inadequate, and a new building is sorely needed. The railroad business has grown 20 per cent over last year, and it is estimated that the orange shipments will be 615 carloads. The Azusa Ice and Cold Storage Company's plant has been enlarged and the output increased.

*Duarte.*—General prosperity pervades the Duarte orange-growing district of 700 people. There are this year 160 school children, amply provided for in a commodious school building. The water-supply is now adequate, by reason of the active development of the past two years. Productive orange groves are the rule, and the orange estimate is placed at 400 carloads. A large business is done in the sale of orange trees. The Leary ranch, 1,400 feet above sea-level, has been purchased by physicians, who will establish a sanitarium.

*El Monte and Puente.*—The country adjacent to El Monte is being settled more and more with a substantial class of people, and the community is improving. Thirteen carloads of walnuts were shipped from El Monte this season. The potato crop was exceptionally large, and it is estimated that there will be 250 carloads of cabbage, 80 carloads of celery, and 45 carloads of cauliflower. At Puente there has been a good hay and grain crop, and the oil operations continue about as usual.

*Whittier and Vicinity.*—The oil industry and the horticultural interests were the chief sources of the year's revenue about Whittier. The amount per month paid out in wages on account of the oil industry in that vicinity is reckoned at \$25,000. A large proportion of the men employed have families in Whittier, and make most of their purchases

in the town. Last season there were shipped about 200 carloads of oranges and 150 carloads of lemons. The vegetable shipments for the year amounted to about 30 carloads. The present season's citrus crop is estimated as 150 carloads of oranges and 200 carloads of lemons. There are about 300 acres of oranges and 250 acres of lemons. Within two miles of Whittier there are 2,000 acres of walnuts, which, for the past season, netted the growers about \$100,000. In 1900 the same groves netted the growers \$80,000. About 200 acres more will be set out to walnuts. In November, 1901, the total high school enrollment was 62, and of the other grades of the public schools, 461. The number of teachers then employed was 14. In November, 1900, the high school enrollment numbered 50; that of the other grades, 431, and there were 12 teachers employed. The population of Whittier in 1900, according to the Federal census, was 1,680. The present population, according to an estimate of the Whittier Board of Trade, is 2,750. The site of Whittier fifteen years ago was a barley field.

*Downey.*—Within the year, based on figures for eleven months and an estimate for December, the Downey Coöperative Creamery received 4,094,404 pounds of milk, from which were made 107,343 rolls of butter, which sold for \$55,845. In 1900 there were received 4,627,560 pounds of milk, from which were made 116,335 rolls of butter, which sold for \$60,191. The receipts and proceeds for the last four months of 1901 were well ahead of those of the corresponding period of 1900. Of last year's orange crop about 100 carloads were shipped away from Downey. This season's crop is estimated at 75 carloads of superior fruit. A large part of the walnuts handled through the association packing-house at Rivera came from the Downey district. The local winery handled nearly 1,000 tons of grapes. Nearly three miles of flumes, costing about \$4,000, were laid in the walnut irrigation district. Four brick blocks were built at a cost of \$13,500, and other building improvements were made at an expense of about \$14,500. There is in the vicinity a considerable acreage of sweet potatoes. From one ten-acre piece there were taken about 100,000 pounds, which sold at an average of about 1½ cents per pound. From about 100 acres of watermelons a big crop was taken.

*Norwalk.*—Sugar-beets yielded handsome returns to the husbandman about Norwalk. There are 171 acres devoted to sugar-beet culture, from which there were sold 2,234 tons of beets, the whole sum received by the growers for the beets being \$9,774. Within two miles of Norwalk there were raised within the year 500 tons of grapes, a considerable part of which quantity was handled through the local wineries, the growers receiving from \$14 to \$16 per ton. About 4,000 pounds of milk per day was handled at the local creamery, a considerable part of the neighboring milk product being taken to the sterilized cream factory at Buena Park. Building improvements made within the year cost about \$2,000. About 300 inches of water was developed by pumping. The litigation in which the Little Lake Ditch Company had been engaged for several years was settled within the year, and about a mile of flume was put in by the company. There is a flow of about 300 inches of water in the flume, from which flow nearly 3,000 acres of land that has during the past three years suffered materially for lack of water, may be irrigated. Two rural free mail delivery routes, extending over about 38 miles, are being established.

*Los Nietos.*—There were about 1,000 acres in the vicinity of Los Nietos devoted to alfalfa, under irrigation. The yield averaged nearly 7 tons to the acre. Water amounting to 200 inches was developed by pumping. The walnuts grown in the vicinity were handled chiefly through the Los Nietos and Ranchito Walnut Growers' Association. The present crop of oranges is believed to be about two thirds the quantity raised last year.

*La Mirada.*—From the 600 acres of olive groves in the vicinity a large crop was obtained. The trees are mostly seven years old. The manufacture of one of the products of grape-fruit yielded a considerable revenue.

*Artesia.*—There were about 300 acres of grapes within 1½ miles of Artesia. The crop, which was lessened by a late frost, averaged about 4 tons per acre, and the growers received an average of between \$14 and \$16 per ton. The Artesia skimming station handled about 6,000 pounds of milk per day, for which the patrons received \$1 per 100 pounds, on a basis of 4 per cent butter-fat. There were about 100 acres of sugar-beets, which averaged not far from 15 tons to the acre. The beets were rich in sugar, and yielded the growers an average of \$5 per ton. Apple trees one year old planted on the alkali soil have a thrifty look. Building improvements made in the neighborhood cost about \$3,000.

*Rivera.*—Most of the walnuts produced about Rivera and neighboring towns were marketed through the Los Nietos and Ranchito Walnut Growers' Association, which has its packing-houses and headquarters at Rivera. According to the official report for the past season the association handled 35,920 bags, or 3,974,067 pounds of walnuts, for which the association received a net return of \$335,702. The total expense of handling the crop was \$1,894. In 1900 there were handled 27,803 bags, or 3,019,162 pounds of nuts, for which there was received a net return of \$274,157. The expenses of handling that crop amounted to \$1,696. The association has about 4,700 acres in bearing. About 250 carloads of oranges of the crop of 1900-1901 were packed and shipped from Rivera. About 200 carloads of walnuts were sent from Rivera, not all of which were from the Walnut Association. The year's new houses and other building improvements cost about \$15,000.

*Santa Fé Springs.*—Grain, hay, pumpkins, lemons, and oranges were the chief products about Santa Fé Springs. For the milk from a herd of sixty cows, C. B. Woodhead received from the creamery within the past year a revenue of \$4,200. The Santa Fé Springs sanitarium is under new management.

*Compton.*—From about 1,000 acres of sugar-beets in the vicinity of Compton the year's shipments amounted to 304 carloads. About 50 carloads more were shipped from Lynwood. The growers received \$4.25 per ton, on a basis of 15 per cent sugar. The industry returned over \$42,000 to the community for the season. From the extensive grain fields about Compton the yield was not far from fifteen sacks per acre, the crop being an average one.

At the Compton cheese factory there were received within the past year 5,869,677 pounds of milk, from which were made 686,720 pounds of cheese, which yielded to the patrons \$73,427, basing the figures on the

record for ten months, and an estimate for November and December. The milk came from 900 cows. Patrons received an average of \$1.28 per 100 pounds of milk containing 4 per cent butter-fat. In 1900 there were 6,450,328 pounds of milk received at the factory, and the cheese output was 721,427 pounds. The sum paid to patrons was \$71,044.34. The creamery northeast of town also handled a large quantity of milk. Buildings put up in the vicinity within the year cost about \$20,000. Two rural free mail delivery routes were established, aggregating fifty miles in length. The apple production amounted to about 250 tons, for which the growers received from \$32.50 to \$35 and upward per ton.

*Florence.*—Sugar-beets have forged to the front among the chief items of revenue to the ranchmen about Florence. From the beets grown on 250 acres of the Cudahy ranch, over \$10,000 was cleared. The aggregate area of the other beet fields about Florence is 600 acres, the yield on those lands being about the same as on the Cudahy ranch. There are 60 acres of walnuts in the vicinity, from which nearly fifty tons of high-grade nuts were taken. Nearly 1,000 acres were set out to walnuts. Great quantities of garden truck were raised in the neighborhood, and sold in Los Angeles. The water-supply on the Cudahy ranch was increased from 250 inches to 500 inches, the water being obtained by pumping. Dairy interests were extended, and there was some increase in population. A dozen buildings were put up at a cost of about \$10,000.

*Clearwater.*—Nearly thirty carloads of sugar-beets were shipped from Clearwater within the past year. There were 400 tons of hay produced in the neighborhood. About 1,000 pounds of milk and 50 gallons of cream are shipped away daily, the milk shipments having commenced late in the year. Thirty tons of fresh fruits in small lots were sent to Long Beach and Catalina Island in the summer months.

*Gardena.*—Notable results in strawberry culture were obtained about Gardena. In 1900 the strawberry fields covered 150 acres, which area within the past year was extended to 175 acres. Nearly all of the berries were sold through Harry Robson. Figures furnished by him show the total sales for the eleven months ended November 30th, to have been 21,698 crates of berries, which, after deducting freights, commissions and costs of packing, yielded the growers a net revenue of \$29,966.50. Newton Cowles raised three crops of strawberries on the same vines. About 1,800 sacks of peas grown near Gardena sold for \$1.25 per sack. About \$18,000 was paid to patrons of the Gardena creamery. In 1900 about \$14,000 was paid. About 380 acres are in alfalfa, being an increase of 100 acres over last year's acreage. From C. E. Wallins's eight-acre piece, which is probably a fair sample, 10 tons per acre were taken, and it sold at an average of \$7 per ton in the field. From three pumping plants, installed at a cost of \$3,000, 200 miner's inches of water is developed. Building improvements made within the year near Gardena amounted to about \$10,000.

*Inglewood.*—Among the year's products shipped from Inglewood were over 100 carloads of barley, 200 carloads of brick, and over 125 carloads of other produce. A considerable part of the products was shipped away by teams. From wells sunk by Charles Freeman, near Hyde Park, 125 inches of water is obtained by pumping, from which is, or will be, irrigated 300 acres not irrigated before. An area of several thousand

acres southwest of Inglewood is about to be irrigated by the Artesian Water Company. The alfalfa acreage was within the year extended from 150 to 450 acres. The devotion of 15 acres to strawberry culture is one of the direct results of the extension of the irrigated area. From 10 acres devoted to calla lilies, and 2½ acres occupied with fresias, many bulbs were shipped East.

*Moneta.*—Most of the year's output of tomatoes, peas, and berries, which are the chief sources of revenue about Moneta, was handled through the Moneta Canning Company, which marketed the produce in Los Angeles when prices were high enough, and canned it at other times. There were 60 acres of tomatoes which yielded seven tons per acre, the growers receiving from \$6 to \$7 per ton. Scarcely any tomatoes were raised about Moneta in 1900. There were 125 acres producing two crops of peas, or one crop of tomatoes and one of peas. The yield of peas for each crop was sixty sacks of seventy pounds each, for which the growers received about \$75, making a revenue of \$150 per acre for the two crops. The conditions about Moneta are especially favorable to the production of peas of superior quality. The company also handled the strawberries grown on 100 acres. The acreage will be enlarged in the coming year. Twelve wells were put down, the largest being the one sunk by Williams & Cochran, from which 175 inches of water was developed by pumping, and from which 800 acres may be irrigated.

*Hynes.*—Fifty carloads of tomatoes, which quantity was nearly double that for the previous season, were shipped from Hynes. The tomatoes were grown within three miles of the place. The creamery received 20,000 pounds of milk per day, cream being brought also from the skimming stations at Bixby and Artesia, the former having been established within the year. The creamery company made improvements costing \$4,000. Other building improvements made in the vicinity cost \$2,500. The equivalent of 15 carloads of hay and 2,000 sacks of corn was raised in the neighborhood and shipped by wagon and rail.

*The Palms.*—Nearly 400 acres of alfalfa was irrigated within the past year from the new water-system of the Artesia Water Company. The other products under irrigation were principally beans, corn, walnuts, grapes, and garden truck, covering an area of 500 acres. Those lands had not previously been under irrigation. The walnut groves cover 200 acres. The trees, which are seven years old, appear to be doing so well that other groves will be set out in the vicinity. The dairy interests have been considerably extended within the year. The well northwest of the postoffice is reported to have penetrated oil sand between the 430 and 520-foot levels. It is expected that a rural free mail-delivery route, twenty-one miles in length, will be established soon. Building improvements made within the year aggregate \$12,000 in value.

*County Farm.*—Of the oranges raised on the County Farm, as the county almshouse establishment is known, there were 22 carloads shipped away last season. At the end of November it was believed that this season's crop would amount to 25 carloads of fruit of unusually good quality. About \$3,000 was cleared from last season's crop. There are at the farm 100 head of cattle, of which 65 are milked, the milk and butter being used for supplying the inmates of the farm and of the County Hospital. Of swine there are 50 thoroughbred Poland-China

brood sows. The pigs within the past year cleared \$1,200, which was more than for the previous year. There are 800 chickens supplying eggs for the farm and hospital. The number of inmates is 190.

*Workman.*—Although the acreage under cultivation about Workman within the past year has been about the same as in 1900, the production has been considerably greater. There were shipped away 30 carloads of sugar-beets and 12 carloads of potatoes.

*Hollywood.*—There were some 10 miles of streets, 100 feet wide, improved as boulevards, about Hollywood within the year. There were about twenty houses built, at a cost approximating \$45,000. Not far from \$10,000 was expended in laying out and beautifying the grounds about the elegant residences in that district. Two new greenhouses were built for growing vegetables under glass, the houses costing about \$7,000. From one \$1,400 greenhouse the products of four and one half months' work were sold at wholesale for \$1,300. The seventh year of pineapple-raising in the valley has marked further success in that culture. Several hundred trees bearing the cherimoyer are from five to ten years old, and the production of that fruit promises to become a considerable industry. Many rare tropical shrubs and plants have been set out about Hollywood within the year.

According to an estimate prepared by G. F. Grass, there were over 200 acres bearing winter tomatoes, the land yielding to the growers from \$275 to \$375 per acre. There were 135 acres of winter peas, yielding a revenue of about \$135 per acre for that crop, and additional returns for melons and cucumbers raised during the remainder of the year. There were about 15 acres of winter egg-plant, which in many cases paid \$300 per acre. An area of 65 acres was devoted to winter string beans, which yielded returns about the same as from the peas. There were about 60 acres of chile peppers, which sold for from 5 to 37 cents per pound, and which gave rather larger returns per acre than the peas. The estimate made includes the lands along the foothills east of Sherman, but does not include about 100 acres of tomatoes and 60 acres of peas west of that town.

*Colegrove.*—The rapid enlargement of the operations of the Cahuenga Valley Lemon Exchange has been one of the chief items in the year's progress at Colegrove. The size of the association packing-house at Colegrove has been doubled, so that it now occupies a ground space 102 x 176 feet. That improvement, a part of which has two stories, cost \$2,300. An addition, 40 x 102 feet, is soon to be built. The output of the exchange for the year ended August 31, 1901, was 161 carloads of lemons, of 312 boxes each. The output for the year ended August 31, 1900, was 76 carloads of 312 boxes each. The area of lemon groves tributary to the exchange is about 400 acres, being 60 acres more than a year ago. The trees range from five to ten years of age. The exchange during the past year employed from eighteen to forty men, the payroll ranging from \$200 to \$450 per week. Electric-power pumps and other machinery were installed at the packing-house at an expense of \$400.

Considerable quantities of asphaltum have been taken from wells on the Hancock ranch, near Colegrove. The oil, which is very heavy, is pumped by a compressed-air process, and sells for \$2.50 per barrel.



*Veterans' Home.*—There have been planted on the home farm within the past year about 40 acres of barley for forage, and 80 acres of corn, beets, and squash; the two latter being raised chiefly for hog feed. The home orchards have kept the tables well supplied with a variety of fruit. The yield of figs, in particular, was very abundant. The number of hogs is kept up at all times to between 600 and 700 head, affording a liberal supply for the home table. Fifty head of Southdown sheep have been added to the home stock, and their number is to be increased. The home garden has produced for the table over 300 tons of vegetables of every variety, except potatoes, which are purchased under contract, and over 50 tons for hog feed.

While a number of improvements are now under way or have been completed within the year, no large appropriations for needed buildings were allowed. A barrack commenced in 1900 was completed and occupied about July 1st. An additional wing to the hospital was also completed. Besides these, the construction in various directions, exclusive of general repairs, has aggregated an expenditure of \$17,343, the principal items of which are the construction of an addition to hospital dining-room, \$10,939; ammonia compressor, installed in power-house, \$3,075; cold-storage plant for canteen (now in course of construction), \$2,900; cement gutters and drainage in park, \$2,000.

Attention is to be given to the beautifying of the park, for which \$1,000 was recently expended in the purchase of several thousand choice trees and shrubs, comprising fifty varieties, which are being set out under the supervision of J. Campbell-Johnston, of Garvanza. Several miles of pedestrian paths form part of the contemplated landscape improvements of the park. The veterans are arranging for the erection of a large aviary at their own expense.

The total membership of the home on December 11th was 2,641, of whom 734 were on furlough. There were also living at the home 79 civilian employes and others, making a total resident population of 1,988. The mortality for the year to December 11th numbered 144.

*San Pedro.*—The lumber receipts at the port of San Pedro for the year 1901 were greater than in any previous twelve months in several years, if not in the town's history. The list of woodstuffs brought by vessels from northern ports, from January 1st to November 30th, inclusive, and discharged over the San Pedro docks for distribution through Southern California, Arizona, and New Mexico, includes 142,627,070 feet of what is classed as lumber, 1,492,500 lath, 56,438,650 shingles, 1,208 piles, 2,483,000 shakes, 16,417 posts, 395,296 ties, and 2,395 poles. Computed in feet of lumber, the quantity contained in a piece one foot square and one inch thick being reckoned as one foot, the receipts for the eleven months aggregated 163,125,270 feet. The estimated quantity for December was 18,000,000 feet. The total receipts of woodstuffs for the year 1900, by the same method of computation, were 125,957,561 feet. The lumber traffic about the port employed approximately 400 men during the year, most of them receiving \$2.25 per day of nine hours' work.

At the end of November there had been delivered on the Government breakwater site 449,929 tons of rock. At that time the trestle from which the rock is dumped had been completed 3,792 feet from the westerly end of the breakwater site, and the substructure with a top surface 38 feet wide at the level of mean low tide had been about com-

pleted for 2,816 feet from the westerly end, and rock had been dumped several hundred feet beyond. About thirty men are regularly employed by the contracting concern, the California Construction Company, in unloading the rock, and more are engaged when the trestle building is in progress. The company's payroll for its San Pedro operations ranges from \$2,000 to \$4,000 per month.

The Union Oil Company delivered at its East San Pedro tanks 65,000 barrels of oil, piped and hauled by rail from the Whittier and Fullerton fields, and shipped it north by vessels, within the year.

The quantity of fish shipped away from San Pedro and East San Pedro within the year, based on the records for ten months, was 1,816,430 pounds. The quantity shipped away in 1900 was about 1,550,000 pounds. Exclusive of the other fish shipments the California Fish Company packed at its East San Pedro cannery, and shipped away, 18,000 cases of sardines. That company made improvements in its packing and fishing plant at an estimated cost of \$12,000. The San Pedro Fish and Ice Company manufactured 800 tons of ice within the year. The lobster-packing plant received 100 tons of lobsters. The plant was not established until late in the year.

*Long Beach.*—Building improvements completed in Long Beach within the year were accomplished at an aggregate cost of \$345,000. Among the most important items were the Coughran Block, \$30,000; Hotel Riviera, \$30,000; Barstow Hotel, \$20,000; Stafford Block, \$17,500; grammar school, \$14,000; Park View Hotel, \$12,500. There were eight other business buildings costing \$45,000. There were twenty-three houses costing \$2,000, or over, amounting to \$58,000. There were also ninety-nine houses costing \$90,500. Repairs and small buildings cost \$27,500.

The Alamitos Beach Water Company sunk a twelve-inch well to a depth of 760 feet, four miles northeast of Long Beach. The well yields a natural flow of 250 inches of water, and it is expected the flow will be increased to 350 inches by pumping. The company has let a contract for \$12,000 worth of piping. Electric street-railway franchises sold by the City Trustees within the year yielded \$17,915 to the municipal treasury. A contract was let recently for nearly \$2,000 worth of fire-fighting apparatus. The pleasure wharf was repaired at an expense of \$4,194.40. The construction of a stone pier in place of the present pile structure is contemplated. There were 50,000 lineal feet of streets graded within the year, at an average cost of 60 cents per foot. There were laid about 200,000 square feet of cement walks, at an average cost of 10½ cents per foot. There were 40,000 lineal feet of cement curbing put in, at a cost averaging 33 cents per foot. Northeast of town, near Burnett, there are about 15 acres devoted to flowers and berries. The area will be extended for the coming year to cover 25 acres. The largest guava field in Southern California, a five-acre piece, is situated near there.

The United Electric, Gas, and Power Company installed a gas plant and laid about 15 miles of mains. The company also installed an arc-lighting system for street illumination. In conjunction with the Seaside Water Company the company contemplates building a power-house which, incidentally, is to supply hot salt water for the \$100,000 plunge bath-house soon to be commenced. The Long Beach Gas Company expended about \$6,000 in improvements and extensions in connection with its new gas plant. The school census of 1900 showed for the Long

Beach district 728 children of school age. The census of 1901 showed 867 children of school age.

The population of Long Beach in 1900, according to the Federal census, was 2,252. The present population, based on the volume of postoffice, banking, and other business, is estimated at 3,000.

*Obispo.*—Eight stills were added within the year to the plant of the Sunset Oil Refining Company at Obispo, increasing the capacity to 2,000 barrels of crude oil per day. The additional tankage made necessary by the increased capacity brought the cost of the improvement up to about \$30,000. The plant is the largest oil-refining establishment on the Pacific Coast. The Globe Asphalt Company's works, operated in connection with the oil refinery, has a capacity of 40,000 tons of refined asphalt per year.

*Wilmington.*—The barley grown on the ranches back of Wilmington, and shipped away, amounted to 1,500 tons. The fish output, much of which was shipped away by teams, amounted to about 500 tons for the year. Fields covering 25 acres are devoted to the growing of flowers for the Los Angeles market, and bulbs for shipment East. A larger acreage will be devoted to grain for the coming year. About \$5,000 was expended in building improvements.

*Terminal Island.*—Buildings constructed and other improvements made at Terminal Island within the year cost about \$15,000. Attractive cottages are reaching out in the direction of Long Beach, and it looks as if the two places might become one. Plans are in contemplation for a solid embankment along the ocean front. The Gordon Arms hotel came under new management during the year. A yacht club was formed, and has already a good membership. With the completion of the Salt Lake road, Terminal promises to become a place of importance.

*Santa Monica.*—Buildings costing nearly \$75,000 were put up in Santa Monica within the year, not counting those in the Ocean Park district. The Academy of the Holy Names cost about \$17,500. The Episcopal Church was improved at an expense of \$1,000. The Auditorium and incline walkway on the beach cost about \$12,000, and \$4,000 was expended on additions to the bowling pavilion. Thirty houses were erected at a cost of \$40,000. There is a considerable number of buildings to be constructed as soon as the necessary labor and material can be procured. Bonds were recently voted for \$35,000 for a City Hall, and for \$25,000 for a bridge on Ocean avenue. The pumping station for the beach sewer system was installed under contract for \$3,685. Street and sanitary improvements, including those in the Ocean Park district, embraced 11,000 lineal feet of grading, 15,600 feet of sidewalks, 6,300 feet of curbing, and 7,700 feet of sewers. Over fifty tons of honey were taken from the Santa Monica cañon and its branches.

The population of Santa Monica, according to the Federal census in 1900, was 3,057. The present population is about 3,500.

*Ocean Park.*—An immense building crop was the year's notable feature in Ocean Park, as the southern part of the city of Santa Monica is known. According to estimates, based on personal knowledge of the situation, and a house-to-house canvass, there were one hundred and nineteen houses built on the sands, costing less than \$1,000 each, and

aggregating \$70,325. There were fifty-six houses costing \$1,000 or over, and less than \$2,000 each, built at an aggregate cost of \$71,116. There were four houses, costing \$2,000, or over, each, built at a total cost of \$10,800. There were also built in Ocean Park, but not on the sands, about twenty-five other houses, costing approximately \$14,375, and three store buildings, costing \$2,400. The Hotel Holborrow cost \$10,100, and the Casino cost over \$10,000, \$6,800 of that amount being for the building. Improvements made on the waterworks, and otherwise, on the Kinney & Dudley tract, cost about \$18,500. The Ocean Park carnation fields were enlarged from five to ten acres, and over 500,000 flowers were shipped away. The new electric railway power-house is estimated as costing \$25,000.

*Port Los Angeles.*—The list of merchandise received from vessels, and shipped from Port Los Angeles, by rail, in the eleven months ended November 30, 1901, includes 188,019 tons of coal, 8,478,611 feet of lumber, 205,050 railroad ties, and 14,901 tons of freight. In that period there were 3,283 tons of freight shipped by vessels. During the corresponding period of 1900 the receipts were 145,925 tons of coal, 6,199,134 feet of lumber, 11,876 tons of cement, 417,159 railroad ties, and 18,728 tons of merchandise.

*Redondo.*—The receipts of lumber from vessels discharging over the Redondo wharves in the past year, based on the record to the end of November, and the estimated quantity for December, amounted to 25,000,000 feet. That quantity exceeded the receipts for the year 1900 by about 100 per cent. For the year ended June 30, 1901, there were 11,530,000 pounds of grain received over the Redondo wharves. For the year 1901 there were 20,000 tons of merchandise of all kinds, except lumber, handled over the wharves. The quantity of fish shipped away from Redondo within the year, based on the record for eleven months, and an estimate for December, was 590,520 pounds. In 1900 the shipments amounted to 511,000 pounds. About 3,000 flowers per day were shipped from the Redondo carnation gardens. Four brick buildings were constructed at a cost of \$12,500. The other buildings put up cost \$6,000. The Pacific Coast Oil Company erected a 30,000-barrel steel tank for crude oil storage, with piping so as to discharge the oil into vessels in bulk at the dock. A large quantity of oil was shipped from Redondo by that company. Two miles of streets were oiled for dust-laying purposes. The Redondo Improvement Company doubled the power of its water-supply pumping plant. The same company is laying off a new beach city on the north beach front, where some important improvements are contemplated. The population of Redondo in 1900, according to the Federal census, was 855. The present population, according to an estimate of the Redondo Board of Trade, is 1,000.

*Santa Catalina Island.*—The year has been one of great prosperity for the island. Each year makes an increase in the number of visitors, but the percentage of increase for the past year has been far greater than for any previous year. Santa Catalina, from being a summer resort, has developed into an all-the-year-round resort; few of the Eastern winter tourists to Southern California fail to visit the magic isle. Already the winter business of the hotels exceeds that of the summer, in volume, and extensive additions and improvements are being made for the accommodation of the winter guests. The Hotel Metropole has added

thirty-eight rooms to its capacity; has provided a ladies' café and billiard room; has constructed a dozen bay windows, reaching from the ground to the roof; has provided a dozen rooms in the older part of the house with private baths; has added forty-two feet to the length of the already large dining-room, giving a seating capacity of over three hundred; has constructed a grand promenade, or veranda, 200 feet long and 20 feet wide in the front of the hotel, and the wall separating the veranda from the office and parlor for almost its entire length has been removed and replaced with plate glass. The company has also installed an electric-lighting plant, which will light the entire village; and an elevator will complete the modern improvements to the hotel.

One of the most important of the plans of the year affecting the interests of Santa Catalina is the establishment of the wireless telegraph system on the island. The Pacific Wireless Telephone and Telegraph Company, with headquarters in Denver, is under agreement to install this marvelous system of communication between Avalon and Los Angeles, by January 31, 1902, which will place the island in communication with the world through this novel method.

## MADERA COUNTY.

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Madera County is bounded on the north by Merced and Mariposa counties, on the east by Mono, and on the west and south by Fresno. The county was organized from a portion of Fresno County in 1893. The assessed value of all property in the county at the last assessment was over \$7,000,000. It has an area of 2,140 square miles, or 1,369,600 acres, of which about one half is on the assessment roll.

Probably half the county is good arable land, and as two streams of considerable size, the Fresno and the Cottonwood, and many smaller, flow across the county, it is possible to put all of this half under the ditch. A large part of the acreage of the plains is devoted to wheat-growing and stock-raising, for the original great ranches have not yet been subdivided for the small farmer. Fruit is raised, and alfalfa grown for dairy stock.

The dairy interest, although still in its infancy, has gained a firm footing during the past year. A skimming station, tributary to a creamery at Fresno, is well established at Madera, with an increasing business; and a large private dairy, with a very complete plant, has been created near Borden. Farmers are beginning to learn the advantages of the dairy business, and are rapidly seizing the opportunity.

Poultry-raising for outside markets is becoming a prominent and paying industry, the climate being especially adapted to it.

The climate and resources of the soil are very similar to those of Fresno, of which originally it was a portion.

Raisins do well and wine grapes are grown in quantities. Near the town of Madera are 1,000 acres surrounding a winery with a capacity of 2,000,000 gallons. Grapes are shipped to the Italian-Swiss Colony winery in tank cars from the neighboring country. It is a thoroughly equipped concern, having modern machinery capable of handling 300 to 400 tons of grapes a day, and a distillery that manufactures 200,000 gallons of brandy per year.

The most notable industrial movement during the year 1901 in Madera County has been the revival of lumbering operations on a large scale. This was brought about by the organization of the Madera Sugar Pine Company, a corporation that has expended something like \$500,000 in establishing large sawmills in the pine belt, in constructing a box factory at Madera, and in connecting the two plants by a flume sixty-five miles long. This flume was that used by the old Madera Flume and Trading Company, which exhausted its timber several years ago, since which time the flume has been idle until the past year, when, after undergoing almost complete reconstruction, it began to bring down millions of feet of the finest kind of mountain lumber to railway connection. The effect of this activity has been marked, not only at the town of Madera, where there has been a very observable growth of population, but in the mountainous region as well.

A portion of the National Yosemite Park is in this county, and there are groves of big trees, besides beautiful scenery.

Gold and silver, as well as copper, are mined in the mountains; and a large smelter for the last named mineral is in operation in Madera. Near Richmond there is a large granite quarry, the product of which is in use all over the State. A match factory has recently been established.

Madera is a thoroughly wide-awake county, which is enjoying its full share of the wave of prosperity that is spreading over the valley.

The main lines of the Santa Fé and the Southern Pacific pass through the county, and there is also a branch line from Berenda to the station of Raymond, whence many passengers leave by stage for the Yosemite.

Madera, the county seat, is located in the southern portion of the county. Borden and Berenda are also thriving towns.

## MARIN COUNTY.

Marin County is a peninsula separated from San Francisco by the Golden Gate, and approaching within a mile and a half of the latter county at its nearest point. It is surrounded on three sides by water—on the east by San Pablo and San Francisco bays, on the south by the Golden Gate and the Pacific Ocean, and on the west by the Pacific Ocean. Sonoma forms its northern boundary. Altogether Marin possesses a longer coast-line than any other county in the State. Its area is 509 square miles, or 325,000 acres.

The topographical features of the county are rolling hills and numerous small valleys. A part of the Coast Range crosses Marin in a north-westerly and southeasterly direction, and much of the surface of the county is broken and hilly, but a considerable portion immediately on the shore is composed of marsh and overflowed lands. The highest land in the county is Mount Tamalpais, which has an elevation of 2,608 feet.

### SOILS.

The soil of Marin County varies from the rich adobe clay of the salt marshes, to the sharp, gravelly loam of the higher foothills. In the valleys it is composed of heavy black loam with an admixture of gravel; in the foothills a reddish loam prevails, sharper, and carrying less abobe. It is all easily worked, heavily charged with the elemental constituents of plant life, admirably suited to horticultural purposes, and wherever worked to fruit yields heavily.

Irrigation is not required. The depth of the soil, its retentive nature, and ample rainfall in the winter months, render artificial watering unnecessary.

### CLIMATE.

Marin County has two distinct climates, which may be named the coast and inland climates. Between these there is a remarkable difference, and one that can hardly be realized when it is understood that they are separated from each other by a low mountain range scarcely three miles across. On the ocean side of this range fogs, chilling winds, and disagreeable weather are common, while on the inland side sunshine, warmth, and spring-like salubrity prevail.

On the inland side is San Rafael, the county seat of Marin, which enjoys climatic advantages unsurpassed in the State. Its nearness to San Francisco is apt to interfere with a just appreciation of its advantages in this respect, as those who are unacquainted with the facts can not believe that there can be so great a difference in the climate of two places so near together. Its range of temperature is not great, the air is dry, and during nine months in the year there is little if any wind. During March, April, and May there are occasional heavy winds.

The following tables of average rainfall, compiled from observations covering a series of years, will show the difference in precipitation at



various points in Marin County, and also the months of the year in which rain is likely to occur:

PRECIPITATION AT SAN RAFAEL, CAL., FROM SEPTEMBER 1, 1875, TO JUNE 1, 1901.

Recorded at Bank of A. P. Hotelling & Co.

SEASON	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June	July	August	Total	No. Days Rain
1875-76.	.00	.15	11.25	4.69	10.42	10.84	11.21	1.15	.27	.00	.00	.00	50.02	56
1876-77.	.45	7.35	.12	8.47	.00	.57	1.69	.05	.44	.05	.00	.00	19.20	35
1877-78.	.00	.70	2.45	2.85	25.35	18.57	5.10	.81	.57	.00	.00	.00	56.42	73
1878-79.	.55	2.99	1.38	.68	5.34	7.21	10.14	2.01	3.22	.00	.00	.00	33.50	44
1879-80.	.00	.91	6.40	4.58	5.12	2.33	2.63	14.15	1.84	.00	.00	.00	37.92	59
1880-81.	.00	.01	.33	18.67	14.63	4.48	.64	3.06	.04	.54	.00	.00	42.46	53
1881-82.	.58	1.41	2.02	8.06	2.77	2.82	4.57	2.40	.32	.00	.00	.00	29.90	56
1882-83.	1.84	6.72	6.09	3.09	1.66	2.52	9.07	2.95	6.16	.00	.00	.00	40.15	51
1883-84.	.52	.89	.74	1.02	7.53	8.58	11.76	11.18	.35	2.03	.00	.00	44.60	65
1884-85.	.15	1.39	.43	25.10	2.79	1.28	1.30	3.00	.01	.06	.00	.00	35.51	44
1885-86.	.00	.39	10.76	6.88	12.26	.18	3.72	6.53	.73	.02	.00	.00	41.48	64
1886-87.	.00	1.44	.67	4.06	2.67	16.59	1.14	3.46	.07	.00	.00	.00	30.10	41
1887-88.	.21	.00	1.53	6.23	10.48	1.28	4.78	.03	.40	.48	.00	.00	25.42	45
1888-89.	1.10	.00	7.46	6.97	1.34	1.13	10.78	1.26	3.49	.01	.00	.00	32.44	43
1889-90.	.00	11.87	5.27	18.00	13.60	6.45	7.79	1.72	.97	.00	.00	.00	65.67	74
1890-91.	.06	.00	.00	5.89	1.02	16.17	2.79	2.35	1.74	.14	.00	.00	30.16	44
1891-92.	.35	.29	.51	8.63	5.47	4.59	3.87	1.88	3.85	.00	.00	.00	29.44	56
1892-93.	.00	1.80	6.52	9.88	6.51	5.26	7.79	1.56	.45	.00	.00	.00	39.77	44
1893-94.	.57	.17	3.14	3.03	10.83	6.85	1.24	1.27	1.60	.94	.00	.00	29.55	34
1894-95.	1.80	4.68	.81	18.65	18.45	3.28	4.82	1.12	1.06	.25	.00	.00	54.92	54
1895-96.	1.69	.00	3.37	3.99	19.87	.11	4.78	9.99	1.82	.04	.00	.00	45.66	46
1896-97.	.35	3.07	8.73	8.54	3.00	8.80	8.82	.90	.61	1.65	.00	.00	44.47	36
1897-98.	.00	4.19	2.22	3.24	1.80	8.18	.18	.45	3.14	.58	.00	.00	23.98	31
1898-99.	.82	1.15	1.26	1.42	10.08	.79	10.07	1.82	2.30	.00	.00	.00	29.71	36
1899-00.	.00	5.81	6.47	4.22	5.67	.76	3.19	3.14	.26	.00	.00	.00	29.52	37
1900-01.	.66	3.74	3.21	2.95	7.29	8.66	1.28	4.68	1.66	.00	.00	.00	34.13	41

# PRECIPITATION AT LAKE LAGUNITAS.

Lake Lagunitas is the Marin County Water Company's reservoir.

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1880----	8.71	4.64	3.35	30.75	4.62	.00	.00	.00	.00	.00	.47	23.97	76.73
1881----	20.33	7.24	1.19	3.99	.12	1.13	.00	.00	1.10	1.49	2.92	10.87	50.38
1882----	3.90	12.53	6.03	3.93	.24	.00	.00	.00	.95	4.93	8.35	2.47	43.33
1883----	4.42	2.20	11.31	3.29	8.43	.04	.00	.00	.91	2.12	1.45	1.84	36.01
1884----	10.05	11.94	15.55	12.95	.39	3.91	.00	.00	.75	4.60	.36	32.86	93.36
1885----	3.66	1.73	1.62	3.17	.00	.00	.00	.00	.00	.89	24.24	9.88	45.09
1886----	16.59	.57	3.75	18.39	1.92	.00	.00	.00	.00	1.83	2.40	11.36	56.81
1887----	4.78	26.80	4.11	6.12	.24	.00	.00	.00	.13	.00	.96	9.32	52.46
1888----	20.19	4.14	13.16	.18	.51	3.75	.00	.00	1.51	.00	11.88	14.11	69.44
1889----	2.50	1.51	22.49	2.68	7.46	.12	.00	.00	.00	24.87	10.82	26.14	98.59
1890----	20.84	10.10	9.85	4.35	2.33	.00	.00	.00	.19	.00	.00	8.08	55.72
1891----	2.07	30.15	9.61	5.30	3.81	.71	1.74	.00	1.31	.84	1.26	9.49	66.29
1892----	7.94	9.97	6.58	3.98	5.59	.00	.00	.00	.00	2.21	10.01	14.56	60.84
1893----	8.60	7.59	18.11	4.25	.94	.00	.00	.00	1.70	1.57	12.99	8.53	64.28
1894----	19.87	12.58	2.95	2.11	5.26	3.15	.00	.00	3.56	10.81	1.89	26.84	89.02
1895----	40.22	8.98	10.21	2.50	3.77	.00	1.75	.00	3.98	.08	6.45	13.47	91.41
1896----	44.25	.48	9.06	17.22	6.50	.00	.00	.06	.64	4.17	20.92	21.47	124.77
1897----	7.34	11.87	14.05	.81	1.54	5.24	.00	.00	.04	5.61	5.09	8.71	60.30
1898----	3.23	16.33	.84	.92	13.19	.00	.00	.00	.97	2.39	4.61	2.31	44.79
1899----	29.74	.56	31.36	4.33	5.34	.00	.00	.00	.00	17.17	16.68	13.68	118.34
1900----	15.38	2.10	9.80	6.53	1.35	.00	.00	.00	.47	7.62	8.51	7.88	59.64
1901----	14.54	18.15	2.60	11.11	2.51	.00	.00	.00	2.32	2.90	12.72	7.11	73.96
1902----	4.83	26.49											

## PRINCIPAL INDUSTRIES.

The principal industry of Marin County is dairying, but of late years attention has been paid to fruit-growing, and some land has been set to orchards. Some of the finest apples grown in the State are produced in Marin County. On the dairy lands of the Novato ranch there are ten orchards. On every rented subdivision of this, and the Burdell ranch, they are growing apple, pear, quince, fig, pomegranate, persimmon, apricot, peach, plum, and other fruit trees, the thrifty growth and large yield from which prove the superior adaptability of the soil and climate of this portion of Marin County to fruit-growing.

On the Novato ranch is one of the largest fruit orchards, including one of the oldest and most celebrated apple orchards, in the State. This orchard contains 250 acres, with 40,000 trees, of which 22,000 are apple, 2,000 apricot, 3,500 pear, and the remainder mixed fruits, including peaches, plums, cherries, English walnuts, almonds, and figs. There are also 200 acres of vineyard planted to Mission and Zinfandel grapes. The fruit from this ranch suitable for canning is taken by the Petaluma Canning Company. The apples are carefully sorted, and the best are packed in boxes and shipped to Australia, where they obtain the highest price, the reputation of this orchard being established at the antipodes. The smaller apples are used for cider and vinegar. Berries are grown to some extent and have proved profitable.

The land in Marin County is generally held in large tracts, and rented out for dairying purposes. It is very profitable in this way, and as a result there is but a sparse population, and but little advance is made in horticulture, although the greater part of the county is eminently fitted for this industry.

The DeLong orchard is the oldest fruit farm in Marin County. It was planted in 1857, and has been in continuous bearing from the beginning. No extensive amount of planting has been done in Marin County during the past year.

NUMBER AND VARIETY OF FRUIT TREES IN MARIN COUNTY IN 1901.

	Bearing.	Non-Bearing.
Apple .....	18,600	10,000
Apricot .....	6,500	900
Cherry .....	400	90
Fig .....	190	60
Olive .....	.....	45
Peach .....	4,620	420
Prune .....	1,800	1,085
Pear .....	900	125
Orange .....	300	100
Almond .....	125	60
Walnut .....	50	25

The chief fruit section of Marin is around Novato, although there are young orchards distributed over the county.

## MARIPOSA COUNTY.

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Mariposa County is triangular in shape, and is bounded on the north by Tuolumne County, on the south and east by Fresno County, and on the west by Merced County. Its area is 1,543 square miles, or 988,000 acres, mostly mountains and foothills. The county reaches eastward from the edge of the San Joaquin plains across the foothills far into the Sierra Nevada Mountains, its altitude varying from 300 to 13,000 feet, Mount Dana, the highest point of land in the county, reaching an elevation of 13,227 feet.

The general topography resembles that of Amador, Calaveras, and El Dorado counties. There are about 300,000 acres of plains and lower foothills together, the latter predominating, and the balance consists of high hills and mountains; bare of timber on the plains, then scattering oak and scrub pines, then rising to immense tracts of sugar and yellow pine, fir, spruce, and cedar, and the giant sequoias of Mariposa Big Tree Grove, which contains some 427 trees, some of 35 feet in diameter and 150 to 300 feet high. The county is well provided with natural water in the Merced, Mariposa, and Chowchilla rivers, fed from perpetual snows. The famous Yosemite Valley is located in the eastern part of this county, at an elevation of 4,060 feet, with walls 5,000 feet higher. The Merced River flows through the valley. This famous valley has been too often and too graphically described to need detailed notice here.

The soil of the plains and valleys is black alluvium, and in the lower foothills there is a sharp, red admixture of adobe and gravel, all easily cultivated and good for grain and fruits.

The climate does not differ from that of Amador and Calaveras. Hot in the summer in the plains and lower foothills, and bracing and invigorating in the mountains. In winter it is delightful in the lower altitudes, while uninterrupted arctic weather prevails in the high mountains, with abundant and lasting snow.

Irrigation is practiced to some extent, water being taken from streams and mining ditches by private parties, and used with good results.

The county, outside of mining, is mostly devoted to grazing and stock-raising, not much grain and hay being raised. The cattle and sheep are ranged in the mountains in the hot summer and in the valleys and plains during the winter.

Considerable dairying is carried on during the summer months in the mountain valleys and a very high grade of butter is made.

The capabilities for fruit culture are precisely similar in range and quality to Amador and El Dorado counties, remoteness from market retarding development. All fruits grow finely; the orange, lemon, fig, olive, apricot, almond and walnut, peach, pear, plum, prune, and cherry in the lower foothills and protected valleys, the grape abundantly through the wider range, and the apple, of very fine quality, in the higher altitudes. Some of the best apples that find

their way to the San Francisco market are produced in Mariposa County. An orchard of 1,500 trees planted by James Lannon in the Yosemite Valley has been bearing for years and with good results. The fruit is very large and handsome in appearance and the yield abundant. The principal fruit sections are around Coulterville, Jersey Dale, Darrah, and Grant's Springs. The orchards of Mariposa County are principally family orchards.

The agricultural and fruit interests of the county are steadily improving; thousands of acres are taken up by settlers every year, and there is yet considerable valuable land left for newcomers. Fruit-growing and poultry-raising promise to be very important industries.

The timber resources of this county are practically inexhaustible, only needing transportation for development. There are twelve saw mills working on local demands.

In former days Mariposa has yielded immensely in gold from its rich diggings. The county is seamed with quartz veins and only needs cheap freights to stimulate further development. The Mother Lode runs through this county. The quality of the ores is mainly like those of Amador County. Within the past year the mining industry has received an impetus which bids fair to place Mariposa in the front rank of the gold-producing counties of the State. The comparatively recent discovery of an extensive copper belt is also attracting the attention of mining men.

Mariposa, the county seat, is well built and provided with churches, schools, hotels, substantial county buildings and business houses, and the only newspaper in the county. Hornitos and Coulterville are mining towns. The absence of railroads retards development in the county.

The population, as given by the last census, is 4,720, being an increase of 1,000 over the census of 1890. There are over forty schools in the county.

The mountain streams abound in trout, the forests in game, and the resinous air of the pine-clad hills gives renewed health and delight in living.

The county has taken a new start this year. Agricultural or fruit lands range from \$7 to \$35 an acre.

## MENDOCINO COUNTY.

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Mendocino County is bounded on the north by Humboldt and Trinity counties, on the east by Tehama, Glenn, and Lake counties, on the south by Sonoma County, and on the west by the Pacific Ocean. Its area is 3,780 square miles, or 2,419,200 acres. It has 100 miles of coast-line. In general topography it is a mountainous county, with valleys lying between the mountain chains, or along the coast. It is one of the three great northern counties—Humboldt and Trinity being the others—that embody the greater part of the northern Coast Range Mountains, taking in their highest peaks, their deepest cañons, their fertile valleys, wooded slopes, rushing rivers, and picturesque scenery. Mendocino County shares with Sonoma, Humboldt, and Del Norte the glory of the great redwood belt of the world.

From north to south, this county has a length of 85 miles. Its width east and west is 45 miles. The Coast Range of mountains, composed of two parallel ridges, traverses the central portion of the county for its entire length. These mountains vary in height from 1,000 to 3,000 feet. Their lower slopes have a gentle declivity, while the higher portions are generally precipitous and furrowed with ravines and gulches. In the eastern and northern portions of the county many small productive valleys are found.

The Eel River, running north, and the Russian River, running south, both have their source in this county, and are the principal streams. A large number of tributaries connect with them; while down the slope of the western ridge large numbers of creeks, some of which might aspire to the dignity of rivers, find their way to the Pacific. It will be seen that Mendocino is well watered with the numerous streams which take their rise in the mountain chain that intersects her territory.

### CLIMATE.

The climate of Mendocino County varies with altitude and proximity to the ocean. On the immediate coast heavy fogs and strong winds are common, while the interior valleys escape these to a large extent, and the extreme heat of the summer months is very greatly modified by their influence. During the summer the thermometer will reach the 100° mark and occasionally touch 10° beyond, but this is unusual. Like other portions of the coast, the heat is not oppressive, and work can be prosecuted without extreme discomfort, even during the hottest days. In the winter there are occasional frosty nights and mornings, and in exposed situations the mercury will sometimes, though not often, fall to 20° above, and it is recorded that on one occasion, in Round Valley, it fell as low as 17°. The temperature will give a mean of 80° for summer and 40° for winter. The rainfall is in excess of that of most of the counties of California, averaging 31.50 inches per annum.

## SOILS.

The land upheaval which formed the Coast Range left between two of the mountain chains a string of lakes, which are, in their geographical position as you travel to the north, the valleys known now as Sonoma, Sanel, Ukiah, and Redwood valleys. Although the formation of these lakes is a matter of geographical history, their conversion into valleys is a matter of recent history. The erosion from the surrounding mountains filled these lakes with a deposit at a very early date after their creation; but the erosion has been deposited to such an extent during the last few years that the large trees situated at the bottom are in nearly every case buried many feet above their roots. If one will consider the original formation of these valleys, and will at the same time keep in mind what the mixture of certain soils will be when the natural chemical reactions have taken place, he will have no trouble in seeing in his mind the nature of the soils in Mendocino's valleys.

The land upheaval left the various strata of rocks which are found in all outcroppings. The erosion from the mountains washed down into the valleys and, mixed with decayed vegetation of the country, made a loam deposit which is very thick, varying from two feet near the foot of the mountains to thirty feet in the middle of the valleys. The soil which adjoins the loam deposit is what is known as black gravelly loam, mixed to a more or less extent with adobe.

Which of the two soils is the stronger is difficult to decide. The loam will produce more corn, while the black land will produce more and better fruit. Both will produce large crops of grain, but one will do about as well as the other.

Next back from the black soil is the hill land. The quality is uniformly a thick brown soil, which is lighter than the other two and drier. This last described soil is little cultivated at present, save in a few instances.

In Ukiah Valley there is the greatest variety of soil, even on a small tract. The river, and the many small streams which come from the mountains, have deposited sand, gravel, or alluvium. Speaking in a general way, there is a band of sandy loam along the banks of the river and larger creeks. Lying back of this and a little lower is a broad band of clay loam, very rich, but a little too rich for the best results. Rising still farther back is a sloping bench running to the hills, and oftener of light, yellow clay, and formerly heavily covered with brush. In some places this bench is deeply covered with coarse gravel. The lower hillsides are clayey and timbered. There are some large bodies of a black gravel formed by mountain streams, and this black gravel is the finest fruit land.

All of the best lands are under cultivation, and the benches will soon be cleared and tilled. Holdings are not large, 200 acres of valley land being an exceptional farm, and the tendency is to subdivision.

The soil in Yorkville Valley is a rich, black loam, and well adapted to the growing of vegetables, fruits, grains, and hops. The soil of the hillsides and mountains is well suited to the growing of grass, vines, and fruits, and in some places grain.

Anderson Valley is a long, narrow strip of land lying between two chains of mountains. It extends 17 miles southeast and northwest, and is from 1 to 2 miles in width. The soil in this valley is a rich alluvial,

and well adapted to the growing of vegetables, fruits, and cereals. The soil of the hills is a rich, black loam, except in a few places, where will be found adobe and gravel.

In Potter Valley the soil is mostly a sedimentary deposit, but a variety exists—some clay, a small amount of adobe, and some of the lands so famous in other parts of the State for fruit-raising.

In Little Lake Valley the soil generally is a rich, sandy loam, but in a few places a black loam is found. The soil is very productive, and pays the tillers a liberal reward for their labors. Never in the history of the valley has there been anything approaching a failure.

#### PRINCIPAL AGRICULTURAL AND HORTICULTURAL INDUSTRIES.

The principal agricultural industries of the county are wool-growing, dairying, poultry and stock raising, and the growing of hops, grain and other cereals, potatoes, apples, and fruits of almost all descriptions. The wine industry is a very thriving one, and new vineyards are now coming into bearing.

Dairying is one of the leading interests, and within the county are located some up-to-date creameries, with numerous skimming stations. The butter produced is of a very high grade and finds a ready market.

Stock-raising, grazing, and wool-growing are very much in evidence. The Angora goat thrives well, the mountains being an ideal pasture for them. There are about 1,000,000 acres of land specially adapted for grazing purposes. The shipments of wool, of a grade second to none, amounted to over 1,000,000 pounds in 1901.

Hops are a very prolific crop and of the highest grade. Last season over 1,500,000 pounds were shipped out of the county.

Crops of wheat, oats, and barley are always certain, and over 1,000,000 bushels were produced last season.

Potatoes and apples of a very fine quality are raised and bring remunerative prices. The apples grown in the county excel in size and flavor the product of any other county.

The Bartlett pear, nectarine, peach, and fig are grown very successfully. Berries of all descriptions grow abundantly and are of large size and fine flavor.

In the near future, with better and cheaper transportation facilities, this county will surely press to the front as an all-round producer of most kinds of fruits.

Messrs. Burns & Waterhouse have recently secured a large tract of land in the vicinity of Hopland for a farm for the breeding of thoroughbred horses on a large scale. They have moved their stock, which includes some very promising young stallions and successful broodmares, from Rancho Del Rio, in Sacramento County. Next to the famous Rancho Del Paso, the property of J. B. Haggin, this firm is the largest breeder of thoroughbred horses in the State.

#### LUMBERING.

In the county are large tracts of redwood, covering over 600,000 acres, the lumber cut from which amounts to 100,000,000 feet annually. The California Redwood Company, with its mills located near Willits, and the Albion Mill Company, are the leading interests engaged in this

enterprise. Shingles, boxes, and other lumber products are manufactured and shipped out of the county in large quantities. The shipments of tanbark alone amount to over \$100,000 during a season.

Ukiah is the county seat, and is located on the California Northwestern Railroad. Recently the railroad has been extended to Willits, a thriving town thirty miles north. Hopland is a growing town, and there are several others located on the coast.

Most of the trade of the county is carried by vessels from coast points to San Francisco.

Land suitable for agricultural purposes, fruit-growing, etc., can be obtained at reasonable prices.

The last report of the United States General Land Office gives the total vacant land open to settlement, as over 737,000 acres, described as mountainous, timber, and grazing.



## MERCED COUNTY.

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Merced County is in the heart of the great San Joaquin Valley, and is centrally located in the State, being almost equidistant between the northern and southern boundary lines. It is bounded on the north by Stanislaus, on the west by Santa Clara and San Benito, on the south by Fresno and Madera, and on the east by Mariposa County. The greater part of its extent, which is about 90 miles east and west and 40 miles north and south, comprising an area of 1,968 square miles, or 1,259,520 acres, lies directly in the San Joaquin Valley, across which it extends from the foothills of the Sierra Nevada range on the east to the summit of the Coast Range on the west. In the northeastern portion of the county there are high foothills, increasing in height as they approach the higher lands of Mariposa County, where they merge into the high Sierra. On the southwest is the Coast Range, with rugged steppes, abrupt cañons, fertile valleys, and hills sloping to the plain, in the lower part of which lies the San Joaquin River.

### TOPOGRAPHY.

With the exception of this small portion of the eastern part of the county, and that situated on the eastern slope of the Coast Range, the county is almost a level plain, broken only by watercourses.

The San Joaquin River passes in a northerly and southerly direction almost through the heart of the county. There are no precipitous banks to the river in this county, and during the high waters it frequently overflows its banks, inundating the adjoining country for a distance of some three miles on either side, twice each year. To the west of the San Joaquin River are the rolling, picturesque foothills of the Coast Range.

A large number of creeks take their rise in the mountain ranges on both sides of the valley. Most of these are torrents in the winter, only to become dry beds in the summer. Some find their way into the plains, and, where not diverted for irrigating purposes, become lost in the soil. Among the principal streams on the east side are the Chowchilla River, Bear, Black Rascal, Dry, Mariposa, Dead Man, Mills, Owens, and Dutchman creeks; on the west side are San Luis, Quinto, Los Baños, Cottonwood, Sycamore, and Wild Cat creeks. The principal stream, however, is the Merced River, which, having its source in Mariposa County, in the Yosemite Valley, runs the greater part of its course through Merced, flowing through the entire length of the county, and reaching the San Joaquin on its western border.

On the eastern side of the San Joaquin are the bottom lands and plain lands, skirted on the east by a narrow strip of low foothills, adapted to most classes of horticultural industry. The Merced river bottom has an average width of three miles, with an abrupt bluff on each side, and the soil is exceedingly fertile.

## CLIMATE.

The climate of Merced differs little from that of its sister counties of the San Joaquin Valley. The summer months are hot, not usually oppressively so, although occasional days in the heated term are too hot for absolute comfort, but not too hot for fruit-drying, at which season they usually come. Frost is infrequent. The mercury will, in the winter, sometimes drop as low as  $25^{\circ}$  in some portions, but so low a temperature is the exception. This extreme low temperature may be expected in January, but never in any other month. The extreme heat in the summer occurs in July and August, when, for a few days in succession, the mercury may rise to  $108^{\circ}$  in the shade in the middle of the day. On account of the very great dryness of the atmosphere, the most extreme heat in the summer does not interfere with any farm or outdoor work. The rainy season commences anywhere from October to December. Snow sometimes falls in the higher foothills, but not frequently. Fogs are not common, and occur mostly in November and December. The average annual rainfall at the city of Merced is twelve inches.

## SOILS.

The soils of Merced County vary with the locality. There are the alluvial lands of the bottom, a heavy reddish adobe loam mixed with gravel, a lighter chocolate-colored loam containing much gravel and sand, and a very sandy loam. The alluvial bottom land soil occurs over a large body of land in the southern as well as in the western part of the district. It is a comparatively late deposit from the Merced River, Bear Creek, and other smaller streams, dark gray in appearance, easy to work, and does not bake after irrigation; it is the soil for vegetables and grapevines. This alluvial soil is also easily irrigated, and holds the water well, and everything planted in it grows quickly.

The heavy, adobe-like loam is a direct wash from the foothills, and is principally found at their base. The color of this soil is dark brown, like chocolate, and it turns darker yet when irrigated. It contains a great deal of iron, and is rich in all constituents which promote plant life. When properly moist, and not too wet, it plows and cultivates easily, and pulverizes to a beautiful loam. This is the favorite soil for the orange and other citrus fruits, not only because it is a rich soil and contains much gravel, but principally on account of its location along the base of the hills, the very place where the thermal belt reigns supreme. This soil is also eminently suited for olives, and must as such be considered as the olive soil. Old olive trees grown in this soil are yearly loaded with fruit.

The third variety of soil is the very dark, blackish-red chocolate loam, very similar to the best of other soils of this character. It differs from this, however, in being more reddish, and it contains much iron. Like the adobe soils, it hardens if left alone after irrigation, but pulverizes readily if plowed or cultivated in time. As to location, this soil is also found at the base of the hills. Geologically considered, it is of older formation than the alluvial soils; in quality it is equal to the best soils anywhere.

A fourth variety is a light, sandy loam, easily worked and irrigated, which holds moisture well, and which abounds in soluble plant-food ready for the immediate use of the trees.

## IRRIGATION.

Like most of the land in the San Joaquin Valley, irrigation is an absolute necessity over the larger portion of Merced County for the production of fruits, alfalfa, grain, and vegetables.

Two of the largest and most complete irrigation systems in the State are owned and operated in Merced County—one on the east side, the other on the west side of the San Joaquin River. The one on the east side is owned by the Crocker-Huffman Land and Water Company, a corporation with a capital stock of \$3,000,000. The main canal comes out of the Merced River just above Merced Falls, where the company has constructed a large dam. The main canal is from 60 to 70 feet wide on the bottom, 100 feet wide on top, and 10 feet deep, the carrying capacity being about 4,000 cubic feet per second. The length of the canal is about fifty miles, with something over 200 miles of lateral or subsidiary canals built as part of the system, and these are being added to as demands require.

On the west side of the San Joaquin River, in Merced County, lies an immense irrigating canal, from which are watered tens of thousand of acres of the finest land in the valley. This canal was built by the firm of Miller & Lux. The canal is over 40 miles in length, and takes water from the San Joaquin River. Over a hundred miles of lateral ditches are maintained in connection with this west-side irrigation system, which has developed an otherwise dry section into an immense garden spot.

## DAIRYING.

Considerable attention is now being given to the breeding of dairy stock, for during the last six years the dairy business has gone ahead with such rapidity that it bids fair to become the principal industry in the near future.

The best-equipped creameries in the United States are to be found in Merced County, and some of the recently-constructed ones are models of up-to-date factories.

Previous to 1895 no attention was paid to dairying. In August of that year a few of the farmers organized the New Era Creamery Company, the pioneer institution of the kind on the West Side. They put up a \$5,000 plant. Within a year the business had outgrown the plant, and its capacity had to be increased. This has been its history every year since. Last year (1901) this creamery turned out 160 tons of fancy creamery butter. It must not be understood that this company has a monopoly of the business by any means. There are in addition three thoroughly-equipped cheese factories in this locality, while several of the large producers have their own separators and ship their cream to San Francisco.

The Fountain City Creamery, in Merced, has an ice and refrigerating plant, burns oil as fuel, and is lighted by electricity. The plant cost about \$10,000, and can care for the milk of a thousand cows.

The several creameries (with skimming stations) located in this section turn out at present one ton of butter per day; yet the industry is only in its infancy, and is especially inviting to the progressive settler of moderate means, as a few acres intelligently and industriously handled will afford a good and sure income.

The great success of the creamery business in Merced County is not only based upon good markets and shipping facilities, coupled with thorough manufacturing processes, but also, and especially, is due to the great alfalfa-growing industry.

The main milk-producing feed in Merced County is alfalfa, and five to ten tons per acre during the season is a common yield. As alfalfa hay is worth a great deal more than nearly all the other kinds of hay, and, pound for pound, is worth nearly as much as wheat bran, it at once becomes apparent that alfalfa belongs to what is termed concentrated feed, and in conjunction with corn, especially as silage, makes an ideal ration and is very inexpensive.

A tract of land consisting of two sections, already seeded to alfalfa, is being subdivided into parcels of twenty to forty acres, to be sold at the remarkably low price of \$65 per acre. One acre and a half will produce ten tons of alfalfa hay, support one cow, whose milk will sell for \$40 at the creamery, one calf worth \$10, and two pigs worth \$20. If this can be beaten in California we have not heard of it. Land that can be bought for \$100 per acre raised more than that many dollars' worth of sweet potatoes last year.

#### PRODUCTS OF THE SOIL.

Merced County is the natural sweet potato belt of the State. Crops of from 15,000 to 30,000 pounds per acre are raised annually. In the vicinity of Atwater, six miles northwest of Merced, are several thousand acres of land that seems to be peculiarly adapted to the growth of sweet potatoes, as experience has demonstrated. From the village of Atwater alone, from 500 to 800 carloads of "Merced Sweets" are shipped to market each year.

Cereals of most kinds are raised, and the county, even with its other great resources, is one of the leading wheat, barley, and corn producers, its yield of wheat in 1901 being over 13,000 tons, barley close to 2,000 tons, and corn over 700 tons.

Alfalfa grows prolifically, and produces four crops a year, besides pasturage. Table, raisin, and wine grapes find a natural home here. Orange, lemon, olive, and fig trees thrive well, while apples, cherries, peaches, apricots, prunes, pears, nectarines, quinces, and persimmons are very profitable. The smaller fruits, such as strawberries, blackberries, raspberries, currants, and gooseberries, yield abundantly. Walnuts, chestnuts, pecans, almonds, and peanuts are also easily raised. The variety and abundance of fruits and nuts produced in Merced County testify to the remarkable fertility of its soils.

A commercial product is buhach, from which the celebrated insect powder is manufactured and sent all over the United States. Over 300 acres are devoted to the pyrethrum plant, as it is called.

#### LIVESTOCK-RAISING.

The Los Banos Farm, the property of Miller & Lux, containing a strip of land thirty-five miles long and sixteen miles wide, raises thousands of cattle and hogs, which are fattened and marketed every year.

The Chowchilla Ranch and Pastoral Company, located near the city of Merced, is extensively engaged in the raising of pure-bred and grade

shorthorn cattle, and its exhibit at the International Livestock Exhibition at Chicago, December 1, 1901, took the first prize.

The herd of thoroughbred Durham cattle on the Howard ranch is second to none in the State.

There are also large flocks of pure-bred and high-grade Merino sheep in the county.

The raising and fattening of hogs for market has proved very profitable.

Poultry-raising is a paying industry in this county. Climatic conditions the year round are favorable to the raising of chickens, yet the demand in California is greater than the supply, and immense quantities of the products of the poultry yard are shipped in from the East every year. This industry offers an assured and profitable income when made a specialty and close attention and up-to-date methods are applied.

### PRINCIPAL TOWNS.

Merced is the county seat. It has fine educational facilities and modern systems of sewers and water-supply, and is lighted by electricity. It is the starting point, via the Coulterville route, to the world-famed Yosemite Valley.

Merced Falls, Snelling, LeGrand, Dos Palos, Volta, Los Banos, Atwater, and Cottonwood are thriving towns, located in districts with surroundings of unexceptional fertility.

Merced County has a population of close to 10,000, according to the last United States census, and is traversed by two transcontinental railroads, viz.: the Southern Pacific and the Santa Fé.

### STATISTICS.

The report of the County Assessor of Merced County shows the following property in the county at the time the last assessment was made:

Value of real estate.....	\$9,442,762
Value of improvements.....	\$1,134,269
Value of personal property.....	\$1,527,826
Value of irrigation canals.....	\$179,437
Number of stock and beef cattle.....	25,344
Number of horses and mules.....	12,282
Number of pounds wheat.....	26,743,000
Number of pounds barley.....	3,473,400
Number of pounds corn.....	1,402,000
Number of tons hay.....	1,445
Number of hogs.....	7,409
Number of sheep and goats.....	72,062
Number of dozen chickens.....	3,648
Value of wagons and other vehicles.....	54,005
Number of acres sown to wheat, 1901.....	165,350
Number of acres sown to barley, 1901.....	53,177
Number of acres sown to rye, 1901.....	27,280
Number of acres planted to corn, 1901.....	1,800

### *Number of Fruit Trees Growing.*

Apples.....	3,470	Pears.....	8,500
Apricots.....	10,527	Prunes.....	25,000
Figs.....	10,718	Lemons.....	1,500
Olives.....	28,019	Oranges.....	7,380
Peaches.....	70,600	Almonds.....	11,200

## LAND VALUES.

Land under irrigation, that will raise almost anything, sells for from \$20 to \$70 per acre; grain land not under irrigation at from \$10 to \$20 per acre; while grazing lands are held at from \$5 to \$10 per acre.

The settlement of land by colonization has resulted very successfully in this county. No more successful colonies can be cited than Dos Palos colony, the Rotterdam colony, the Pioneer colony, El Capitan colony, and the British colony, all regularly laid out in tracts of five, ten, and twenty acres. Intensified farming is practiced and comfortable homes and thrifty farms are the result.

The report of the United States General Land Office, July 1, 1901, gives the acreage of vacant land open to settlement, as over 75,000 acres, and describes it as rolling foothill, mountainous, farming, and grazing.

## MODOC COUNTY.

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Modoc County lies in the extreme northeastern corner of California, and is bounded on the east by Washoe County, Nevada, on the north by Lake and Klamath counties of Oregon, on the west by Siskiyou County, California, from which it was created in 1874, and on the south by Lassen and Shasta counties of California. It has an area of land and water amounting to about 4,296 square miles, or 2,749,440 acres.

The county is a succession of mountain ranges and valleys branching off from the Sierra Nevada Mountains, the principal spur of which is known as the Warner range. It is principally drained by Pitt River, which flows into the Sacramento near Redding and ultimately reaches the waters of San Francisco Bay at Benicia. The Pitt River derived its name from a band of Indians inhabiting this portion of the State in its earlier days. The name of the county is taken from that of the Indian tribe which formerly inhabited the extreme northwestern part of the county, in what is known as the lava-bed section. This lava-bed section occupies over one half the total area of the county. The county has two large lakes, but barring the lakes and the magnificent cattle properties of Jesse D. Carr and W. B. Whittemore it is a sparsely settled country, fit only for the grazing of cattle. It reaches from Siskiyou County on the west to the shores of Goose Lake on the east, and from the Oregon line on the north to the center of the county on the south.

The valleys of Modoc County are its principal features, the leading ones being Surprise Valley, lying on the eastern side of the Warner range and running from Oregon on the north into Nevada at the eastern and southern ends; Goose Lake Valley, stretching from the west side of the Warner range to Goose Lake on the west and into Oregon on the north; Hot Spring Valley, comprising the central parts of the county; Jess Valley, in the Warner range; Big Valley, in the southwestern part and running into Lassen County on the south; and Little Hot Spring Valley, in the extreme southwestern corner and touching Lassen, Shasta, and Siskiyou counties.

The soil of Surprise Valley is a rich, dark loam. The part of the valley located in California is generally under cultivation, with land selling at from \$10 to \$60 an acre. Wheat, barley, grain, fruit, vegetables, and hay are the leading staples. Thousands and thousands of acres are in alfalfa, and the stock and dairying industries are thriving. Every ranch has a fine orchard, and ranch houses and barns, costing \$5,000 or \$6,000 in total improvements, are not uncommon. Trees, both shade and ornamental, abound around every place. The principal towns of this valley are Fort Bidwell (an old Indian fort, now abandoned as such, but the seat at present of an Indian school) at the northern end; Lake City, 15 miles to the south; Cedarville, at the center of the valley, and the largest and most prosperous town in the county; and Eagleville, 16 miles south of Cedarville.

Goose Lake Valley resembles Surprise Valley in all material particulars, but is not quite so large. It also is well improved.

Big Valley is varied in character of soil. As the larger part thereof is in Lassen County, extended mention is not necessary, more than to say that its principal town, Adin, is within Modoc County and supports quite a population.

The climate of Modoc County is that of the temperate zone, and the products are those of the great intermountain region which stretches from the Sierra to the western plains of Kansas. Snow falls in the valleys and much deeper still in the mountains, forming the principal supply of moisture for the development of the country. Stock is usually fed for several months through the winter, although it is not always necessary so to do. The thermometer will sometimes run below zero for a few days in the winter, but it is not for very long, and 90° is extreme heat for the summer. Even in summer the evenings are cool and delightful.

The county is well watered. Surprise Valley has nearly twenty streams, which run both winter and summer. Goose Lake Valley is equally fortunate; while the Pitt River supplies water for many farms and ranches. Many springs exist, especially in the mountains; and in Surprise Valley there are many artesian wells.

The timber of the county is pine and fir in the Warner range, and sugar pine in the western part. In the southwestern part T. B. Walker, of Minnesota, has acquired about 60,000 acres of choice sugar pine, and will extend the McCloud River Railroad therein within the next two or three years.

Horticulture has had but a small place in the industries of the county, only sufficient fruit for home uses being raised. However, the gradual approach of the railroad running north from Reno, Nevada, will increase the productivity in this line immensely within the next few years, as the county is well adapted for apples, pears, and berries. The wild plum is about the only native fruit, the cultivated fruits being brought in the earlier days from the Eastern States by the emigrants who came across the plains. A great deal of orchard planting has been done within the last three years, and the entire county is being developed at a rapid rate.

The last three years has seen a great deal of reservoir work undertaken throughout the county and its tributary valleys, and the future is bright indeed. The rains, which oftentimes come too late for the Sacramento valleys, come in time to furnish us with abundant harvests year after year.

The nearest railroad point to Alturas, the county seat of Modoc County, is Madeline, in Lassen County, and 33 miles south of Alturas. Daily trains are run from Madeline to Reno, the metropolis of Nevada.

There are seven flouring-mills in Modoc County, located at Bidwell, Lake City, Cedarville, New Pine Creek, Alturas, and Adin.

There are nine sawmills, located at Bidwell, Cedarville, Eagleville, Willow Ranch, Davis Creek, Jess Valley, Alturas, Adin, and Widow Valley.

There are four Masonic lodges, at Bidwell, Cedarville, Alturas, and Adin; one Royal Arch Masons, at Adin; three Eastern Star lodges, at Alturas, Adin, and Eagleville; four lodges of Odd Fellows, at Alturas, Bidwell, Adin, and Cedarville; and the A. O. U. W. and Knights of Pythias also have lodges.



The population of the county by the last census is about 5,100, over 2,100 being in Surprise Valley and about 1,300 around Alturas and in the Hot Spring valley country; the rest being in Goose Lake and Adin, with scattering settlements elsewhere.

There are quite a number of school districts. The finest school house is at Cedarville; it is a two-story, four-roomed building, in the center of a town square, and is surrounded by trees. There are nine school districts in Surprise Valley, five in Goose Lake Valley, eight around Alturas, one in Jess Valley, and eight at the west end of the county.

Modoc County has had its greatest development within the last four years, and while it has derived considerable notoriety by reason of the lynching of three Indians, one Mexican, and one squaw man by local settlers in the extreme southwestern corner less than 2 miles from Lassen, 10 miles from Shasta, and 15 miles from Siskiyou, still it has within itself more than abundant capital to develop its resources, and is so far independent of outside money and outside people that it makes no attempt whatever to encourage either investment or immigration, being content to wait for natural increase to settle the vacant lands and for home money to improve and maintain the country.

The country naturally drains its trade toward Reno, in Nevada, where connection is made with the Southern Pacific Railroad. The interests of Modoc County are those of Nevada, of which Surprise Valley was originally a part, and the majority of the people, in the eastern part of the county at least, favor annexation to the mother State, Nevada.

## MONO COUNTY.

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Mono County is a long, narrow county, its greatest length bordering on the State of Nevada, which forms its northeastern boundary. On the south it is bounded by Inyo, on the west by Fresno, Mariposa, and Tuolumne, and on the northwest by Alpine County. It has an area of 2,796 square miles, or 1,889,440 acres, of which all but 400 square miles are mountains.

The western portion of the county lies among the Sierra Nevada Mountains, the heights being clad in snow, and the slopes of the range being covered with forest trees. Among the highest peaks in the county are Mount Dana, 13,627 feet; Mount Lyell, 13,217 feet, and Castle Peak, 13,000 feet. The eastern portion of the county, which is usually spoken of as a strange, mysterious country, is of a desert-like, volcanic character, abounding in salt pools, alkali, and volcanic table-lands, the characteristics of this portion of the county being significantly indicated by some of the local names, such as Hot Springs, Geysers, Sulphur Springs, Black Lake, Soda Pond, Volcanoes, Obsidian Mountain, Deep Cañon, Volcanic Table-Land, Red Crater, Adobe Meadow, and Oasis. Mono Lake, situated in the center of the county, is about 15 miles long by 10 miles wide, its waters being a somewhat unusual compound, various chemical substances being found in solution in them. This lake has the appearance of having once been the scene of volcanic action; the country surrounding it, as Bodie, Aurora, and Benton, abounding in minerals. A number of volcanic cones, having extinct craters, lie to the south of the lake, and a great portion of the formation of the district may be considered volcanic; débris consisting of porphyry, granite, limestone, and a remarkably pure obsidian, and deposits of lava are found at Aurora and Table Mountain. The fires of the ancient volcanoes may not yet be all extinct, for upon the islands in the center of the lake jets of hot vapor escape; and there are a number of boiling springs of water. The great bluffs and rocky ravines of the Sierra come almost to the western shore of the lake, while upon the western side salt deposits and lines of driftwood mark the plain, showing very distinctly what were the former more extensive shores of this sheet of water. Upon the bluffs of the western side are water marks, which make it seem highly probable that the waters were once almost a thousand feet above their present elevation, spreading out over the plains to the east to form a great inland sea. The lake receives a number of small streams, but is without a perceptible outlet. Owens River in the south, which takes its rise in a high peak in the Sierra, Mount Kitten, and Walker River in the north, are the principal streams in the county, the one passing through the southern part of the county into Inyo, the other continuing its course, after rising in Mono, to the State of Nevada.

Mono County, being situated on the eastern slope of the Sierra, and

the larger portion of it in the high mountain regions, has a climate totally different from that of the western slope, and resembles more that of the Eastern States than that of California. In the higher altitudes the summer days are pleasant, although in the lower valleys the mercury will rise well toward 100° occasionally. The winters are characterized by heavy snowfalls and severe frosts.

The valley soil of Mono is formed by erosion from the mountains, and is to a great extent sedimentary, with alluvium. A great deal is barren and sandy, and great tracts of alkali are found. There is, however, a considerable amount of fertile land, which, by the aid of irrigation, can be made productive, and already much has been brought under cultivation by this means. Cereals do not attain that perfection of growth so desirable, partly from the extreme altitude of the county, and partly from the rigors of the climate, attendant to some extent thereupon.

Mono County has, however, a considerable cultivable area; much of it is very rich and fertile. This lies mostly in the western part of the county. Among the richest of her agricultural lands may be classed Bridgeport Valley, or Bridgeport Meadows, as it is frequently called; Antelope Valley, Long Valley, and the famous Adobe Meadows in the vicinity of Mono Lake. There is also a large amount of rolling foothill country admirably adapted to grazing.

The agricultural resources of the county are chiefly confined to the raising of hardy cereals and vegetables for home consumption, and the small surplus finds a ready sale in the adjacent mining camps.

Apples are of a superior quality and flavor and thrive well. Plums and peaches are grown on a limited scale. Berries also do well, considering the altitude.

Grazing is the leading industry and the pasturage is good and plentiful. Considerable dairy cattle are moved from the valleys during the summer months, and an excellent product of butter is made. Large bands of sheep are also driven to its mountains for summer pasturage. Goats, hogs, horses, and mules are raised in considerable numbers.

Farming is increasing and much new land is constantly being brought under cultivation. Water in many of the valleys is plentiful, and irrigation will always secure a crop in all the valleys, which are very fertile.

The winters are quite severe and long, it being necessary to provide shelter for stock. Considerable hay, both natural timothy and alfalfa, is raised for winter feeding.

The timber belt of Mono is very large and of good marketable character; but as there are no means of transportation to markets the development of the lumber industry is retarded, although considerable quantities are used for local mining purposes.

Bridgeport is the county seat, and is located in a prosperous farming section of the county.

Considerable mining for the precious metals is carried on, the leading mining camp being Bodie, from which place over \$30,000,000 in bullion has been shipped in the past. This industry is again prosperous; the introduction of the cyanide process permitting the profitable working of large bodies of low-grade ore that heretofore were of no value, on account of the cost of reduction.

Lundy, Aurora, Sweetwater, Benton, and Castle Peak are all historic camps of the early days of silver mining. They are now receiving new life and capital is being attracted and new developments have been made. Altogether the interests of the county are more prosperous than for years.

The latest report of the United States General Land Office gives the area of vacant lands in the county as over 1,500,000 acres, describing the same as grazing, agricultural, timber, and mineral. The county is very sparsely settled, but offers considerable opportunities for capital and settlers.

## MONTEREY COUNTY.

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Monterey County is situated about 100 miles south of San Francisco, and 500 miles north of Los Angeles, on the Pacific coast; it is bounded on the north by Santa Cruz County and Monterey Bay, on the east by the counties of Kings and San Benito, on the south by San Luis Obispo County, and on the west by the Pacific Ocean. It is 124 miles long and 45 miles wide, its extreme length being from north to south, and covers an area of 5,580 square miles, or 3,571,200 acres.

Owing to the peculiar topography of the county, with its rough mountains and broad plains, its great river running from south to north with tributaries from either side, its rolling hills and rugged mountains, it is found to be a miniature of the State with its entire diversity of climate and soil, enabling it to produce everything produced in the State, and rendering it one of the most desirable regions in the State for settlement.

Its rivers furnish a never-failing supply of water for irrigation, and the mountains abound in all the minerals—gold, silver, copper, coal, bitumen, and oil—which will be referred to separately in another place.

The county is divided into three sections—the mountains and hills on the east, mountains and hills on the west, and the great Salinas Valley situated between these ranges of mountains, and opening upon Monterey Bay on the north. This valley extends south from Monterey Bay over 100 miles, and is from 5 to 15 miles wide.

### THE EASTERN SECTION.

The Gabilan range of mountains extends down the eastern side of the county. Gabilan Peak, near the northern end of the chain, is 3,381 feet above the level of the sea, and Mount Cholame, 45 miles to the southwest, is 3,800 feet in height. This range extends from the Pajaro River on the north—where the county begins—through the entire length of the county in a southeasterly direction.

Going south from Pajaro River, the first twenty miles of the range consists of low hills and small valleys, covered with grass and timber. In this belt, Carneros, Aromas, and Prunedale districts are notable for their beautiful homes and extensive orchards of apples that go largely to supply the shipments from Pajaro. Here are also found extensive apiaries. All fruits, vegetables, and berries grow to the highest state of perfection.

The next forty miles of the range is composed of higher and rougher mountains, which produce an abundance of grass, and are used for grazing stock cattle on a large scale—the more accessible parts for dairying.

Southeast of this portion, from the San Lorenzo River to the southern boundary of the county, the mountains are low, rolling hills, interspersed with numerous little valleys, among which are Peach Tree,

Cholame, Slack's, Long, Indian, Priest, Parkfield, and several others, all possessing rich soil and delightful climate, fine grain and stock ranches, small orchards and beautiful homes. All have fine schools, and many have nice churches with regular services. The town of Parkfield has three stores, two hotels, blacksmith shop, school-house, church, postoffice, etc., and is in the upper Cholame Valley, near coal and oil fields.

### THE WESTERN SECTION.

The Santa Lucia Mountains, on the west side of the county, extend from Monterey Bay in an unbroken line southeast, bordering the coast, as far as San Luis Obispo County. After leaving the bay, for 20 miles they are a rough mass, with an average width of 18 miles, and an elevation of 5,000 feet at the highest point.

The Carmel River rises in this range, runs north, and empties into Carmel Bay about 5 miles south of Monterey. It is a beautiful stream, draining the hill country north and east of the northern termination of the Santa Lucia Mountains, and abounds in mountain trout. The valley bordering the river is one of the richest in the State, producing beets, potatoes, berries, vegetables, and fruits, and having three or four of the finest apple orchards in the county. The hills are covered with grass, feeding fine cattle for dairying purposes.

Carmel Bay is 4 miles in length, 2 miles in width, and has deep water. In the mountains near its border are deposits of coal.

San José Creek rises in the same mountains, runs north and empties into this bay. The Big and Little Sur rivers also rise in this range, flow west and empty into the Pacific Ocean. All these streams are noted for trout-fishing, and their little valleys contain fine farms and stock ranches. Idlewild, on the Sur, is a pleasant summer resort for camping parties.

Farther south the mountains are heavily timbered with oak, redwood, and pine, and are used for ranging cattle.

Point Lobos juts out into the ocean at the southern extremity of Carmel Bay. Point Sur is about 20 miles farther south, near the mouth of the Sur River. Cypress Point is situated at the northern point of Carmel Bay, and is one of the grandest spots on the coast. The dark cypress trees—from which the point was named—cover the headland and skirt the water's edge, and their seeds have been planted all over the State.

About 90 miles south of this point is situated Los Burros district, consisting of several paying quartz and placer mines, gold mining being the principal employment.

Salinas River has its source in San Luis Obispo County, enters Monterey County nearly in the center of its southern border a few miles north of the mission of San Miguel, runs north about 100 miles, and empties into Monterey Bay. It is the third river in length in the State, and its tributaries are the Estrella and San Lorenzo from the east, Arroyo Seco, San Antonio, and Nacimiento from the west. The Arroyo Seco empties into the Salinas about 30 miles southeast of Salinas City. About 20 miles up the stream the valley narrows into a cañon, leading back into the mountains in a southerly direction, and heading far up in the Santa Lucia range. The little valleys are rich, and all cultivated

to grain; the mountains are used for grazing. In this cañon are fine indications of oil, the wells sunk showing flattering prospects.

The San Antonio and Nacimienta rivers flow through the upper part of their course in a direction opposite to that of the Salinas, being a southeasterly direction. For more than 30 miles they are nearly parallel, and only 5 or 6 miles apart. The region between consists of high ridges composed of bituminous slates, underlaid by sandstone, in which there are the finest prospects for oil in the State; the bitumen also being of superior quality.

Where the San Antonio River emerges from the mountain gorge and opens out into the beautiful Jolon Valley, is to be found the San Antonio Mission, still in a fair state of preservation, built by the Mission Fathers. It is one of the most picturesque valleys in the State, with its great, towering oaks, and rich, alluvial soil. This is the finest wheat belt in the county, and deciduous fruit trees produce well. The olives can not be excelled in the State, and at the old Mission still stand trees now two hundred years old. The valley is about 15 miles long, and 3 or 4 miles wide. In the vicinity of Pleyto are some fine orchards.

Along the Nacimienta River, south to the border of San Luis Obispo County, are low mountains used for farming and stock-raising, many farms containing fine orchards of deciduous and semi-tropical fruits. There are numerous small valleys, like Sapaque and Hames, which are rich and productive.

On the east, the Estrella is a wheat-growing district, with cattle and sheep in the hills.

Near the head of the San Lorenzo are great coal deposits which are being worked, and coal shipped to San Francisco. Lower down, the bitumen is of fine quality, and two mines are operated.

The portion of Pajaro Valley lying south of the Pajaro River, and running to Monterey Bay on the southwest, is in Monterey County, and is about 15 miles long, and from 6 to 8 miles wide. The land is exceedingly fertile and under a thorough system of cultivation, producing immense crops of all kinds of vegetables, grain, fruit, and berries. Well-tilled farms greet the eye, and villages, school-houses, churches, and picturesque residences dot the landscape in every direction. The foothills are covered with sleek flocks and herds, and the lower ranges are timbered with live oak. The Pajaro River flows southwesterly and finds an outlet in Monterey Bay, near the mouth of the Salinas River.

#### THE SALINAS VALLEY.

The great Salinas Valley, embraced by the Gabilan Mountains on the northeast and the Santa Lucia range on the southwest, opens out on Monterey Bay and extends southward 100 miles, with an average width of 10 miles, therefore its area is about 1,000 square miles, or 640,000 acres. It begins to form near San Luis Obispo County, and gradually opens until at Salinas City it is from 12 to 15 miles wide, and is as fine a section for farming as can be found in California. Salinas River flows through its entire length. The land may be divided into three classes, viz.: First, the heavy, rich bottom lands, which produce almost everything, the soil being sediment and black adobe, which often contains just enough sand to make it work easily. Second, the mesa or table lands, particularly adapted to growing wheat, barley, and other cereals;

the average yield of wheat being 30 bushels, and of barley, 50 bushels per acre. Third, the uplands and slightly rolling hills, some of which are the finest fruit lands in California, and will produce oranges, lemons, grapes, peaches, apricots, almonds, walnuts, figs, apples, plums, pears, berries, and all other fruits common to the State.

### CULTURAL PRODUCTS.

Nearly all semi-tropical fruits do well in some part of this county, especially in the thermal belt along each side of Salinas Valley. A number of orange and lemon trees in yards of Salinas City hang full of fruit each year and are never injured by frost. Around Salinas, apples, pears, quinces, plums, cherries, and walnuts excel, while all the fruits do well in the valley.

In barley (producing 50 to 100 bushels per acre), potatoes (the famous "Salinas Burbanks"), beets, and carrots, this valley can not be surpassed; 20,000 acres being in beets alone, and 2,000 in potatoes.

Going south, wheat excels; and grapes, peaches, prunes, apricots, cherries, and almonds grow to perfection in the foothills, cañons, and small valleys, and figs do well in sheltered places.

Olive trees flourish with all the vigor they possess in their native country. Currants, gooseberries, blackberries, Loganberries, and raspberries grow luxuriantly. Strawberries are in the market all the year round, and are shipped from Pajaro by carloads. Grapes grow to perfection everywhere in the county, except in the heavy bottom-lands of the lower Salinas Valley. Thousands of fruit trees and vines have been planted in the last few years, and many are now bearing.

Experience gained in the varied climate of the county has brought about a policy of growing the varieties of fruit that long experience and careful trials have demonstrated to be best adapted to any particular locality. Over a large area of the county the apple has been selected as the leading fruit. The English walnut, while an infant industry, has been proven to be equal in quality to any in the State. Apricots on the mesa or table lands of the Salinas Valley can not be excelled, and the Moorpark is a steady bearer. Almonds and prunes are equally prolific in the same locality, peaches in the southern part of the county, while the lower Salinas and Pajaro valleys are particularly adapted to potatoes, beets, apples, and berries.

### IRRIGATION.

Extensive work has been done in the last few years in bringing the valley under a thorough system of irrigation. Near San Lucas there is some irrigation; a canal near King City, taken from Salinas River, distributes water to several thousand acres. Another, from Arroyo Seco, covers several thousand acres, and is 12 miles long. Opposite Soledad, on the south side of Salinas River, considerable irrigation is done around Fort Romie on lands purchased by the Salvation Army, and sold on most favorable terms to worthy poor in need of homes. This is one of the most prosperous colonies in America, and shows the spirit of enterprise among its promoters. At Soledad is another canal, leading to Gonzales, which covers several thousand acres of fine land.

Around Spreckels's sugar factory, 3 miles from Salinas City, a great deal of land has been irrigated for raising beets. This is the largest



beet-sugar factory in the world, with an output of over 60,000 tons during the season of five months, slicing 3,000 tons of beets daily, and employs, during the manufacturing season, 700 men in the factory alone, to say nothing of the hundreds employed on the outside, hauling, topping, etc. It requires 30,000 acres of land, planted to beets each year, to supply this factory.

The main transcontinental line of the Southern Pacific Railroad enters this county through Pajaro Valley on the north, runs southeast through the entire length of the county, paralleling Pajaro and Salinas rivers, with its numerous trains daily, giving it railroad facilities for shipping and traveling unsurpassed by any county in the State, and surrounded by every comfort and luxury known to railroad science.

#### CITIES AND TOWNS.

Pajaro, the first town of any importance after entering the county—named for the valley—is the great shipping point for apples, berries, all fruits, and dairy products of this section, and is at the junction of the road leading to Santa Cruz, 20 miles distant. Then comes Castroville, one of the oldest towns in California, situated at the mouth of Salinas Valley, at the junction of the road to Del Monte Hotel, Monterey (the first capital of the State), and Pacific Grove.

Hotel Del Monte, "the queen of American watering-places," including the main structure and two annexes, together with the connecting wings, is simply immense, and everything connected with the establishment is on the same magnificent scale. The magnificence of the hotel is repeated in the grounds, which cover 140 acres of land laid out in lawns, flower-beds, parks, and groves, and the landscape gardening is a marvel of beauty. In this inclosure is the railroad depot, for it is a town in itself.

A little farther on is Monterey, situated on the beach of Monterey Bay, lying back on her sloping hills, overlooking the placid waters of the bay—one of the grandest and most beautiful townsites nature ever formed.

Two miles farther on is Pacific Grove, the terminus of this road; and if beauty and grandeur of scenery, delightful climate, a blue sky, and soft breezes make an earthly paradise, then is Pacific Grove fairly entitled to that name. Nestled among the pines is the little town of 2,000 inhabitants, with beautiful streets, magnificent cottages, fine churches and school-houses, charming drives, and with never a saloon in its sacred limits.

The harbor of Monterey Bay is unequaled on the Pacific Ocean. The largest battleships of our navy find anchorage within 100 feet of the shore, and during heavy storms at sea it is not unusual to see many ships of different nations anchored in the calm waters of the bay. The fishing is incomparable for quantity and variety, and a cannery is located at Monterey. There is an abalone canning factory located at Point Lobos, and one at Point Sur, both of which are run exclusively by white labor. Monterey Bay contains about one hundred and fifty species of food fish, and many are annually taken for market. There is a whaling company at Monterey, and some seasons many whales are captured.

The climate of Hotel Del Monte, Monterey, and Pacific Grove, all things being considered, is the finest in this State, having the equable

mildness of Southern California without being languorous. The number of sunny days is as great as anywhere in California, while the practical absence of frost, owing to the distinctively ocean climate, makes the variation of temperature between night and day very slight. A street-car line connects the three towns, and is liberally patronized.

Returning to Castroville on the main line, and traveling 10 miles south, one comes to Salinas City, the county seat, with 4,000 inhabitants, in the very heart of the best portion of Salinas Valley, the head of the first division of the railroad, near the great Spreckels sugar factory, and containing extensive gas and water works, a large flouring-mill turning out 600 barrels of flour daily, a large creamery, a planing mill, and shops, fine stores, three banks, many churches, and four school-houses, with about 700 pupils and 17 teachers. The schools are in session ten months annually, and the high school is on the accredited list. There are many magnificent residences and well-improved streets. Fraternal societies are well represented, there being a list of 32. Newspapers are plentiful—two dailies, three weeklies, and a monthly, comprising the list. It is a good place to invest money, where one can attend church, send children to good schools, and have the best of society in a salubrious climate unsurpassed for health and comfort.

Traveling south from Salinas, the first town on the railroad is Chualar, 13 miles distant, in a fine wheat belt, having about 500 inhabitants, and containing a fine school and churches.

Ten miles farther on is Gonzales, a beautiful town of 1,000 inhabitants, with fine stores. It is quite a shipping point for grain, fruit, and dairy products, and is surrounded by a fine grain district and some alfalfa fields in the irrigated district. The Fairview fruit district is on the west, and some of the finest dairies in the county are also located here. The town has fine schools and churches.

Soledad, 10 miles farther south, named for Soledad Mission, is in another wheat belt, and is an important shipping point for grain and dairy products. It is the nearest point to Paraiso Springs, whose waters contain medicinal properties of a high order. This place is highly improved, and is called the Carlsbad of America. Soledad has a good public school of two departments, and a church.

King City, 20 miles farther south, is growing rapidly, being in a finely irrigated district. It is a shipping place of considerable importance, and has large stores, fine schools, and churches.

San Lucas, 8 miles farther south, is situated in a fine wheat belt, is the shipping point for the most of Jolon Valley, has large warehouses, and is a promising town of 400 inhabitants.

San Ardo and Bradley are located successively 10 miles apart, still farther south, surrounded by wheat fields, and from which considerable stock is shipped to San Francisco. Bradley is the shipping point for coal from the mines in Slack's Cañon.

The narrow-gauge railroad from Pajaro to Salinas parallels the main line on the west, taps Monterey Bay at Moss Landing—where there are extensive warehouses and lumber yards, and where the coast vessels stop regularly for grain and merchandise—then continues to Spreckels' sugar factory, and is used principally for hauling beets to the factory and lime rock from the quarries, though considerable grain is also shipped by it from the region west of Salinas. This road will be continued for 50 miles farther south in the near future.

## TEMPERATURE RECORDS.

The climate of Salinas is one of the most equable in the world, as will be seen from the following record for the past five years, showing the highest, lowest, and mean temperature for every month in each year:

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1896—Highest .....	70.0	72.5	81.5	70.0	70.0	78.0	72.0	70.0	78.0	91.5	78.0	66.5
Lowest .....	28.5	29.0	33.0	40.0	44.0	50.0	43.0	53.0	47.0	42.0	28.0	32.0
Mean .....	56.9	43.8	52.1	51.8	54.3	58.5	56.9	56.9	58.1	58.5	51.9	46.0
1897—Highest .....	63.0	74.5	70.0	79.0	74.0	75.0	84.5	76.5	93.5	82.5	77.0	67.0
Lowest .....	44.8	35.0	30.0	41.5	51.0	51.0	54.0	52.0	47.0	40.0	31.0	37.5
Mean .....	64.0	50.3	50.0	54.2	57.0	62.0	61.4	59.5	59.6	55.7	55.6	51.6
1898—Highest .....	64.0	73.0	77.0	76.0	87.0	75.0	77.5	75.0	88.0	94.0	78.0	65.0
Lowest .....	27.5	37.0	43.0	48.0	49.5	51.0	53.0	52.0	48.0	44.0	38.0	34.7
Mean .....	44.6	52.4	54.9	56.3	57.1	61.1	59.5	59.6	60.1	55.1	54.2	48.9
1899—Highest .....	78.0	81.0	86.0	88.0	75.0	86.0	81.0	85.0	89.0	95.0	73.0	71.0
Lowest .....	29.0	24.0	30.0	32.0	33.0	42.0	44.0	36.0	36.0	35.0	32.0	31.0
Mean .....	54.5	49.5	51.7	55.3	55.6	59.1	55.5	63.7	60.5	53.3	52.9	50.2
1900—Highest .....	68.0	73.0	67.5	74.8	77.0	71.0	76.0	78.0	88.0	69.0	80.0	77.5
Lowest .....	29.0	37.5	35.0	38.5	49.0	51.0	52.0	53.0	46.5	39.0	31.0	32.0
Mean .....	49.2	52.6	49.2	51.7	57.2	56.9	58.9	59.6	58.5	52.5	49.2	49.8

## PRICES OF LAND.

The settler who can not find within the boundaries of Monterey County some place to suit his requirements must indeed be hard to please. He can secure the most fertile soil and a faultless climate on the most reasonable terms. In the southern part of the county are many cheap lands.

## MONTEREY COUNTY IN BRIEF.

Can furnish its own fuel, food, wool, leather, and oil.

Has great diversity of climate and soil, affording great choice of locality.

Has fine schools and churches in reach of every home.

Has an honest, peaceful, law-abiding population.

Has great natural resources in divers branches, developed and undeveloped, awaiting capital.

Has an equable temperature, healthful climate, and absolute freedom from malaria.

Has an abundant rainfall, insuring crops and water, and an abundance of cheap fuel near at hand in wood, coal, and oil.

Has the finest potato-growing region on earth, producing 150 sacks of Salinas Burbanks per acre.

Has the largest band of thoroughbred Angora goats in the United States.

Has the largest beet-sugar factory in the world, with a capacity of 3,000 tons of beets daily, all the beets used being raised in the county; daily cost for beets during the five months' run is \$12,000, and for labor and other expenses \$5,000.

Has 75 dairies, with an average of 250 cows each, producing cheese and butter, with all improved machinery for manufacturing.

Has many large stock farms, and many large and profitable apiaries.

Has as fine chicken ranches as can be found in the State.

Has large coal quarries, oil wells, and bitumen beds.

Has the finest watering-place on the coast—Hotel Del Monte.

Has the finest medicinal springs in California—Paraiso and Tassajara.

## NAPA COUNTY.

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Napa County lies northeast from San Francisco about 40 miles, and is 70 miles southwest from Sacramento. It has an area of 789 square miles, or 504,960 acres, and is bounded on the north by Lake and Yolo counties, on the east by Yolo and Solano counties, on the south by Solano County and San Pablo Bay, and on the west by Sonoma County. Napa is one of the smallest counties in the State, but at the same time one of the most important. Its length is about 50 miles, with a varying width of from 30 to 35 miles.

### TOPOGRAPHY.

Spurs of the Coast Range Mountains pass through it, most of which have a northerly trend. Between these spurs lie several rich and very productive valleys, where the soil is very rich, the climate congenial, and the scenery unsurpassed.

The western line of Napa passes along the ridge of a chain of mountains the entire length of the county. East of this chain lies the beautiful Napa Valley, extending from Mount St. Helena at its northern end to San Pablo Bay on the south, and varying in width from one to five miles. The only valley of importance intersecting the slope on the western range is Browns Valley, which lies northwest of Napa City, and is a lovely and productive little glen. White Sulphur Springs Creek, Dry Creek, and Carnero Creek flow down from these mountains, emptying into Napa River, a stream which extends the entire length of the valley and is navigable as far up as Napa City. The lower end of Napa Valley opens out fan-like to quite a wide expanse, and is low, flat tule land. Midway between the two extremes of Napa Valley and near its center from east to west is Yountville Hill. Mount St. Helena, at the head of the valley, rears its summit nearly 4,500 feet above the level of the sea. A chain of mountains extends along the entire length of the eastern side of Napa Valley, being broken by a few streams and cañons. Conn Valley is a small widening of the valley, through which the creek of the same name passes.

In the eastern range of mountains there are some high peaks, such as Bald Peak, Atlas Peak, Howell Mountain, etc., ranging in height from 2,000 to 3,000 feet. The eastern and western ranges unite at the northern end of the county, Mount St. Helena forming the point of union. Over the Howell Mountain grade, at the east of Napa Valley, lie the broad and fertile fields of Pope Valley, and over a low divide to the south of Pope is Chiles Valley; a high range of mountains on the eastern side of Pope and Chiles valleys separates them from Berryessa Valley. This valley is drained by Putah Creek. Off the road from Napa to Berryessa are the small and lovely glens of Capelle, Gordon, and Wooden valleys.

## CLIMATE.

The climate of Napa will compare favorably with that of any of the interior counties. Its situation with regard to the bay and ocean is such as to yield it all the benefits to be derived from their proximity, while its interior position and mountain ranges deprive it of their discomforts. The rainfall averages so well that a shortage of crops is unknown. The influence of the ocean breeze is felt here during the summer months to an extent amply sufficient to temper the sun's heat, while the hills act as a barrier against the fogs. The foothills of Napa County are especially famed for their climatic features, and here are found some of the most noted health resorts in the State. In the thermal belt of the foothills is found a mild and equable climate the year round, and citrus and other sub-tropical fruits will grow there. In the spring the mornings are cool and bracing, the days bright and pleasant. During the summer the weather is warm, but the heat seldom becomes oppressive, the thermometer rarely registering higher than 90°. The rains of winter are interspersed with warm, sunny days. In the valleys during the winter months there are frequent frosty nights and sharp, cold mornings, but rarely sufficient frost to injure the fruit crop.

## SOILS.

The soil of Napa County may be divided into five classes. The first class, termed argillaceous, is common to the mountains on the east side of the county, and is not very productive. In Berryessa and Chiles valleys there is a large percentage of this soil mixed with a rich loam, adapting these sections to grain-growing. The second class, adobe, does not exist to any great extent, and is found only in spots in Berryessa, Pope, Chiles, and Browns valleys. It is a stiff, cold, and disagreeable soil, not easily worked. The best soil is the loam, which may be found in all the valleys of the county, but principally in Napa. It is a rich alluvium, well adapted to all sorts of vegetable growth, and especially suited to fruit. Tule soil is found from Napa City southward, and along the margin of the bay. The last class is lava, a decomposed volcanic formation, and is excellent for vineyards. It is found in the vicinity of Howell Mountain.

## HORTICULTURAL AND VITICULTURAL INTERESTS.

Napa's great industry is wine-making, and her viticultural interests are second to no other county in the State. Other branches of horticulture are followed, however, and with great success. The olive has been planted extensively upon hillsides which are almost useless for other fruits, and the tree thrives and promises to become a great source of wealth. The climate of Napa Valley and its surrounding sections is admirably suited to olive culture. It corresponds strikingly in its main features to that of the south of France and northern Italy, whence come the best imported pickled olives and olive oil. The olive tree needs a temperate climate, and dreads equally excessive cold or hot weather. It requires less labor and care than any other tree. It will grow to better advantage on high and stony land, comparatively useless for any other culture. There it will bear quicker and heavier than in

a rich soil, its degrees of productiveness ranging from forty to a hundred gallons per tree, when the tree has reached its full development. It has been repeatedly demonstrated that in the exceptional soil and climate of California, and when one-year-old rooted cuttings are planted, it begins to bear when four years old. It enjoys an almost incredible longevity, since many modern travelers report having seen trees in Asia Minor which are over two thousand years old. Add to the above the simplicity and cheapness of the apparatus needed for oil making and olive pickling, the easiness of handling the crop, the cheapness of transportation of the product, considering its great value under a small volume, and its immense consumption in all parts of the civilized world, and it will be easily conceived why olive culture is going to stand foremost among the industries of California.

Napa also produces deciduous fruits of all kinds, in quantity and quality equal to the best favored sections of the State. The prune especially does well, and much attention has been paid to it of late. Apples and pears do well in all parts of the county, but make the best returns in the more elevated situations on the mountain slopes. Walnuts, almonds, apricots, peaches, cherries, prunes, and all the small fruits are raised to perfection, and without the aid of irrigation. While Napa makes no claim to superiority, or even to general adaptability to the growth of citrus fruits, yet there are many locations in the county where these thrive and yield good crops. All through Napa Valley, and especially in the foothill thermal belt, may be seen little orchards containing from half a dozen to several hundred trees, all of which are in as thrifty a condition as is possible, never having been attacked by the scale, and producing large crops of fruit, from 800 to 1,500 oranges having been gathered from a single tree.

#### CEREAL PRODUCTS.

While wine-making and fruit-raising are its chief industries, diversified farming in this county is carried on on a large and very profitable scale. Cereals of most kinds do well. The hay crop is a very large one and of fine quality. The soil in all the valleys being very rich, corn, potatoes, hemp, and hops do well.

#### DAIRYING AND STOCK-RAISING.

Dairying and stock-raising are carried on very extensively in the county, there being an abundance of natural feed; alfalfa will grow without irrigation on the lower lands. There are several creameries equipped with the latest improved machinery and appliances, with skimming stations throughout the county. The milk, after passing through the separators, is used for the fattening of hogs, which are raised in large numbers.

The highest types of pure-bred and graded livestock of all kinds are found throughout the county. The Napa Stock Farm, devoted exclusively to the breeding of thoroughbred horses, has several high-class imported stallions and over sixty thoroughbred mares. Coach, draft, and standard-bred horses are raised in several portions of the county.

Poultry farms are numerous. While not as prominent as in the

adjoining county of Sonoma, poultry-raising is a very important industry. Considerable quantities of live and dressed poultry, also large numbers of eggs, are shipped to San Francisco.

#### MINERAL RESOURCES.

Mining is limited chiefly to quicksilver, and at present it is the leading producer of this mineral in the State. There are several good prospects for silver. Oil is known to exist, and there are a few producing wells. A deposit of building-stone of a high quality is found.

Mineral springs are numerous throughout the county, and the bottling of mineral waters is quite an important industry.

#### PRINCIPAL TOWNS.

Napa is the county seat, and offers liberal inducements to capital desirous of starting manufactories. At present there is a glove factory, shoe factory, a woolen mill, carriage works, and several large creameries. It has railroad communication with San Francisco, also two lines of steamers running daily.

St. Helena, Calistoga, Yountville, and other prosperous town are located within the county.

The last report of the United States General Land Office gives the area of unoccupied public land as 115,000 acres, described as hilly, agricultural, and grazing.



## NEVADA COUNTY.

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Nevada County is bounded on the north by Sierra and Yuba counties, on the west by Yuba, on the south by Placer, and on the east by the State of Nevada. It extends from the summit of the Sierra Nevada range, on the east line of the State, westward to the Sacramento Valley, a distance of 70 miles. It is from 12 to 20 miles in width. On its western line it has an elevation of about 1,000 feet, increasing to 2,000 or 3,000 feet in the central portion, and 8,000 feet along its eastern boundary. It has an area of 1,125 square miles, or 710,000 acres. Its natural boundaries are the South Yuba and Bear rivers on the south, and the Middle Yuba River on the north. The general course of these rivers is from northeast to southwest, and through the northern and central portions the county is partly divided by the South Yuba River, which unites with the Middle Yuba, near the western boundary of the county, and forms the main river, which is a tributary of the Feather River.

The western and middle portions of the county present a pleasing variety of landscapes in wooded hills, small valleys, or rolling uplands, a large part of which is well adapted to agriculture and grazing, and to the cultivation of orchards and vineyards. Along the extreme western boundary citrus fruits grow to perfection, as do the olive and other sub-tropical fruits; through the central portion, in which are located Nevada City and Grass Valley, at an altitude of 2,500 feet, the Bartlett pear and other fruits of the temperate zone reach their best development in flavor; while at an altitude of 3,500 feet and 400 feet farther up the mountain slopes, the apple attains a superiority unequalled by similar fruit raised at lower elevations.

The variety in soil, the difference in temperature, and accessibility of transportation, are encouragements to fruit and vineyard culture that are making a valuable and profitable production, steadily growing in importance, and which will, in the near future, prove a source of considerable local wealth.

### CLIMATE.

With so much variation in altitude, from 1,000 to 8,000 feet, there is of necessity a great difference in the climate of the different portions of Nevada County; and while one section enjoys all the advantages of California climate, others are exposed to the rigors of an Eastern winter. In the extreme eastern end of the county the thermometer in January and February sometimes falls 20° below zero, and something like 150,000 tons of ice is harvested, which supplies all fruit and refrigerator cars for the East, besides supplying a great quantity of ice for California consumption. At the same time that ice is harvested in this section,

oranges are picked in the western end of the county. To Eastern people who are not acquainted with California climate, this seems like a fairy tale, but is nevertheless true.

At Grass Valley and Nevada City the climate is in all respects healthful and salubrious. The elevation above the lowlands of the Sacramento Valley lifts Nevada County above malarial influences, and its middle and mountain sections are inviting to those seeking health and recreation. The temperature is comparatively mild at all seasons. In the summer, when the days are hot in the foothills, in the mountains the atmosphere is tempered to agreeable moderation, while the nights, at even the lowest altitudes, are always comfortably cool. There are but a few days in the year when the thermometer marks above 85°, and in winter it is seldom that the temperature goes below the freezing point in the middle section of the county.

The summer season is dry. Occasionally showers fall in the early part of June, but during the remainder of that month, and through the months of July, August, and September rain seldom falls, and usually in October the showers are light. The remaining months of the year comprise what is known as the rainy or winter season.

In the lower foothills snow is rarely seen, and in the middle section attains but a moderate depth. It does not remain on the ground, owing to its moist and unfrozen condition. In the higher mountains snow falls to a considerable depth, covering the summit ranges, and remains late into the following summer months; and on the northern side of the higher peaks snow may be seen at all seasons of the year.

It is the variety of climate, difference of elevation in the country, and the picturesqueness of the landscapes presented that make Nevada County particularly inviting as a home, or attractive to the tourist, who always retains a pleasing recollection of a visit to this interesting and beautiful region.

The rainfall for the season is not often excessive, the average annual precipitation being about 50 inches; but there are exceptional years in which there is a variation of 8 or 10 inches above or below these figures. These figures vary, too, with the altitude, the precipitation on the higher lands and mountains being much heavier than in the valley region. The annual rainfall makes the failure of crops an impossibility, and generous harvests are almost invariable.

#### WATER-SUPPLY.

The abundance of rain and the melting of snow in the mountains afford an adequate supply of water for the canals and artificial reservoirs, that can be used for the purpose of either mining or irrigation, and for the latter the demand is steadily increasing for clover and grass lands and orchards.

The soil of Nevada County, in its analysis, is similar to that of Placer County, and with proper cultivation is capable of producing cereals and fruits without the aid of irrigation.

Wherever irrigation has been used, crops of every character have been raised in remarkable abundance. There is plenty of water stored in artificial reservoirs along the summit of the mountains, such as no other county equals. Originally these artificial lakes and expensive ditches were constructed to supply hydraulic mines. The length and capacity

of the main ditches connected with the reservoirs, and size of lakes of the several companies, are as follows:

Name of Company.	Main Ditches, Miles.	Capacity, Inches.	Cost.
North Bloomfield .....	157	3,200	\$708,840
Milton .....	80	3,000	391,500
Eureka Lake .....	163	5,800	723,300
South Yuba .....	223	7,000	2,000,000
Excelsior .....	160	5,000	1,000,000
	783	24,000	4,823,640

Principal Lakes.	Area, in Acres.	Capacity, Cubic Feet.	Size of Dam, in Feet.
Bowman .....	950	1,000,000,000	100 x 420
French .....	337	660,000,000	54 x 200
Weaver .....	100	130,000,000	68 x 100
Fordyce .....	790	1,800,000,000	90 x 700
Sterling .....	120	300,000,000	40 x 80

### FRUIT CULTURE.

Nevada County holds a prominent position among the fruit-growing counties of California, and with her great variety in soil, climate, and altitudes seems well adapted to nearly all varieties of fruit. Orchards of fruit and nut-bearing trees, and vineyards of the choicest table, raisin, and wine grapes, are specialties.

It having already been shown that while California, as a whole, beats the world in this direction, these foothills equal any other part of California in the quality, and in some things, as pears and winter apples, for special adaptation and regular productiveness. Within the past few years hundreds of acres have been planted in fruit trees and vineyards, and they all thrive well. Wine made from grapes grown on Nevada's foothills has an enviable reputation.

The abundant rainfall is especially propitious for the growth of the Bartlett pear, which here reaches its perfection. This fruit finds a ready market in Eastern States, and brings good prices.

Oranges grow well here. In at least half of the circuit, in all that part below the bench upon which Grass Valley is situated, in the lands 1,000 to 1,600 feet above sea-level, the thermal belt of the foothills, the citrus fruits are at home.

Of course, any kind of fruits adapted to temperate zones flourish in Nevada County. The olive, fig, prune, and all kinds of berries are numerous.

The principal fruit sections of Nevada County are Chicago Park, Grass Valley, Nevada City, San Juan, French Corral, Rough and Ready and Anthony House. The chief fruits grown in these sections are apples, pears, peaches, plums, cherries, grapes, and nuts; but the contiguous country is fast being converted into a veritable garden by sturdy and far-sighted toilers, whose orchards and vineyards dot the hillsides in every direction.

### MINERAL WEALTH—OTHER INDUSTRIES.

Besides the fruit industry, Nevada County is the banner gold-producing county in California, having the largest hydraulic mines in the world and a number of quartz mills running forty stamps. An electric railroad is now in operation between Grass Valley and Nevada City,

being a broad gauge with seventy-pound rails, and the very latest style of cars. This line is supplied with power from the Bay Counties Power Company, whose plant is situated on the Middle Yuba River, which is the dividing line between Nevada and Yuba counties. This plant has a capacity of 17,000 horse-power, and also runs the street cars of Oakland, Sacramento, San José, and other places, besides furnishing power in eighteen counties of this State. The Truckee River General Electric Company, situate in the western part of the county, supplies the mines of Virginia City with power.

The second largest paper mill in the United States is on the Truckee River, and gives employment to some four hundred men, women, and children.

The mountains are thick with sugar and yellow pine, fir, spruce, and cedar. The Truckee basin yields about 50,000,000 feet of lumber yearly through the mills of Truckee. The lumber industry in and around Nevada City, Grass Valley, and Truckee is one of the leading industries. The town of Overton has one of the largest box factories and sawmills in the State, and is connected by a railroad with Truckee.

Grass Valley and Nevada City are four miles apart, with a population in the two towns of about 10,000.

Much stock is raised and fine butter made in the high altitudes of the Sierra in summer, with every advantage of clear, pure water, cool weather, and abundant nutritious grasses.

## ORANGE COUNTY.

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Orange County is one of the youngest counties of California, having been organized by the legislative session of 1889, from a portion of Los Angeles County, which bounds it on the north; on the east is San Bernardino and on the south San Diego County, while its entire western border, a distance of 40 miles, is skirted by the Pacific Ocean. Its area is 665 square miles, or 425,600 acres. This is divided into mountains, 65 square miles; foothills, 100 square miles; and valleys, 500 square miles.

The Santa Ana range of mountains is the line between Orange and San Bernardino counties at the northeast corner of the former county. It is also the dividing line between Orange and San Diego counties on the east. This range also sends up a line of foothills westwardly along the seashore nearly half way across the county. All of the western portion of the county is included in the Santa Ana plain, or valley. There are also several small valleys among the foothills and along the mountain streams. The Santa Ana plain is covered with rich loam, and, with the exception of some patches of alkali, is very productive. The highest point of land is what is locally known as Saddleback, or Santa Ana Peak, with an elevation of 5,675 feet.

### WATER-SUPPLY.

There is an abundant water-supply in this county. The Santa Ana River enters the county near the northeast corner, and traverses the entire Santa Ana plain, flowing into Newport Bay. Besides this stream there is Santiago Creek; also Aliso, Trabuca, Mission Vieja, San Juan, and Coyote creeks, and other streams. The last-named creek forms the boundary between Orange and Los Angeles counties on the west.

The artesian belt running through Orange County furnishes a plentiful and cheap water-supply, and makes the section as nearly independent of rainfall as it is possible to be. Much artesian water has been developed; more, perhaps, in the artesian belt west of the river than in any other portion of the county. There hundreds of artesian wells have been sunk and the farmers are installing pumping plants and organizing irrigation districts.

### CLIMATE.

The climate of Orange County does not differ to any great extent from the climate of Los Angeles. On the immediate coast heavy fogs are common in the early spring months, but these are not of long duration, nor do they usually extend far into the interior. As the matter of temperature and precipitation is treated of under the Los Angeles caption, no further allusion need be made to it here.

## SOILS.

In the foothills of Orange County a sharp, gravelly loam of a reddish color prevails. Descending into the valleys this loam loses its color and its sharpness and becomes black, with a large admixture of adobe and frequent streaks of alkali.

Beginning about one mile west of Santa Ana is a deposit of alkali. Here is a strip about ten miles long, which will average something like a mile in width, and on the west side of the Santa Ana River patches of this mineral may be found impregnating the soil in the vicinity of Westminster and Garden Grove. West of the Santa Ana River large deposits of peat are found, the product of tule roots and other swamp vegetation. This varies in depth from a few inches to sixteen feet. This land is considered the best for agricultural purposes in the county, and is held at a high figure by its owners.

## FRUIT CULTURE.

All the fruits do well in Orange County. Many varieties of oranges and several of lemons are grown in this county, taking their names generally from the party introducing them, the country from which brought, or a peculiar marking of the fruit. The Mediterranean Sweet, Washington Navel, Valencia, Kohna, and Mission, or Seedling, are the varieties generally preferred. Of lemons, the Genoa, Eureka, and Lisbon may be named.

Oranges are shipped from here from the last of December until June, the bulk in March and April.

There is an impression abroad that while Southern California is especially adapted to oranges and other semi-tropical fruits, it is not well suited to the culture of deciduous fruits, especially apples. There are some portions of Orange County where apples are grown which vie with those of the Eastern States or Oregon, in size, flavor, and appearance. The error is partially excusable, because it is only during the past few years that much fruit besides oranges and grapes has been grown here. Now, however, large orchards are annually being planted to almost every variety of fruit that is known.

The principal fruit sections of Orange County are Westminster, Garden Grove, Anaheim, Orange, Santa Ana, Fullerton, Placentia, and Tustin, and apricots, peaches, apples, oranges, lemons, figs, prunes, and walnuts do well in this county, apricots especially holding front rank, with walnuts in the second place.

The larger amount of the fruit produced in Orange County finds a market in the East, the citrus fruits and walnuts being shipped entirely out of the county. The deciduous fruits are very largely disposed of to the fruit-drying establishments and packing-houses, and by them shipped both dry and green to Eastern States.

Orange County stands as the forty-eighth county in the State, out of a total of fifty-seven, in point of area, while it ranks as fifteenth in population, and thirtieth in assessed valuation.

## AGRICULTURE.

The acreage in Orange County is 30,000 to 40,000 of barley, 12,000 to 15,000 of wheat, 4,000 to 5,000 of corn, about 3,000 of oats, 5,000 of beans, and 10,000 of hay. Much of the barley is exported for brewing

purposes, and some 2,000 carloads of grain are shipped out of the county in years of average yield, besides 200 to 400 carloads of hay.

The rich bottom lands yield immense crops of corn, and large portions grow the finest crops of alfalfa and natural grasses.

The mesa, or uplands, are of the finest quality, and admirably adapted to barley, oats, wheat, flax, hemp, and the vine, as well as all the ordinary northern fruits.

Every character of soil that is found in California can be duplicated in these lands, and every product grown in the semi-tropics can be successfully raised here.

#### VEGETABLES.

The celery industry has grown so that the present season finds about 2,400 acres in celery. Last season the total output of celery footed up 756 cars. This season (1902) the output is expected to amount to somewhere in the neighborhood of 1,100 cars.

While celery-growing is occupying much attention just at present, other sources of income are not neglected, and of these the most important are the dairy interest and the rearing of cattle and hogs for market. The exact figures are not now available; but it may be safely asserted that cattle-raising and dairying are a close second to celery-growing, and the rearing of hogs for market is not far behind either.

The shipping of vegetables, consisting of early onions, potatoes, cauliflower, cabbage, etc., is a growing and profitable industry. Last season over 100 cars were shipped to Eastern points.

The sugar-beet is raised extensively, and a factory is located at Los Alamitos, in the western portion of the county. This factory has just completed a four months' run, during which it has consumed the product of over four thousand acres of land, and has turned out millions of pounds of sugar, ready for table use. The big sugar factories at Chino and Oxnard have drawn extensively from the soil of this county, thousands of tons of beets having been shipped the past season to these places from the vicinities of Anaheim, Buena Park, Garden Grove, Westminster, and Bolsa.

#### MANUFACTURES.

The Buena Park condensed milk factory, located in the northern portion of the county, and now consuming 24,000 pounds of milk per day, furnishes employment to forty men and women, and pays out \$14,000 each month to the farmers for their milk and to the factory employes.

The flouring-mill at Olive has had to work day and night during the greater portion of the year to keep up with its orders. Besides consuming the wheat product of the Santa Ana Valley, this mill draws heavily from San Diego, Riverside, San Bernardino, and Los Angeles counties.

The three canneries in the county turned out large packs this season, over one million cans each, and besides this many of the large fruit-growers dried their own product and shipped it in carload lots to the Eastern market.

#### SHIPMENTS.

From Santa Ana, Orange, and Tustin the shipments of principal products, including celery from the peat lands, have been as follows: Oranges, 825 cars; English walnuts, 85 cars; celery, 1,200 cars; lemons 50 cars; peanuts, 20 cars; wool, 40 cars; green grapes, 50 cars; raisins, 20 cars; livestock, 95 cars; beans, 80 cars; green olives, 30 cars;

canned fruit, 80 cars; dried fruits and vegetables, 65 cars; hay and grain, 230 cars.

From Fullerton, Placentia, and Anaheim the shipments during the same period have been as follows: Oranges, 715 cars; cabbages, 45 cars; lemons, 55 cars; walnuts, 120 cars; wool, 40 cars. These, together with the hay, grain, and other products sent out, will make the annual shipments from the northern portion of the county exceed 2,500 cars.

#### PETROLEUM.

No business in the county has developed more rapidly during the year than the oil industry. North and east of Fullerton thousands of dollars have been expended in sinking wells, several of which have turned out to be gushers. The oil product of this county now is at least 55,000 barrels per month and new wells are being sunk every week. There has been considerable prospecting for oil in other portions of the county, but so far without success.

#### PRINCIPAL TOWNS.

The population of Orange County is over 20,000. Santa Ana is the county seat, with a population of 5,000. Anaheim is next in size, Orange following. Other towns and villages are Bolsa, Tustin, Buena Park, Los Alamitos, Garden Grove, Westminster, Fullerton, Placentia, La Habra, McPherson, El Modena, Villa Park, Olive, Yorba, Newport, Fairview, El Toro, and San Juan Capistrano. Of the above places, Tustin is a charming suburb of Santa Ana, with splendid orchards, attractive homes and people of refinement; Fullerton, in the northern part of the county, is a place of much business and the headquarters of the oil industry of that section; El Toro is made up in large measure of English settlers of wealth and progressive ideas; Westminster, Garden Grove, Fairview, and Newport are surrounded by damp farming lands, and are the sources of supply of much of our vegetable and dairy products; while San Juan Capistrano in the extreme south is the seat of one of the largest and most interesting old missions upon the coast.



## PLACER COUNTY.

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Placer County lies between latitude  $38^{\circ} 70'$  and  $39^{\circ} 30'$ . Its direction is northeast and southwest, and it is about 100 miles long and of varying widths, from 10 to 30 miles, the course and distance being defined by the course of the rivers which define its boundaries. It extends from about 8 miles from the Sacramento River to the summit of the Sierra Nevada mountains. Just above Auburn, between the Bear and American rivers, the county is very narrow, being but about 8 miles across. Above Auburn it widens out into the two divides lying between the Bear River and the Middle Fork of the American River. These are known as the Dutch Flat or Railroad Divide, and the Forest Hill Divide. The southwestern portion of the county is more regular in shape than the part just described, being bounded on the east by El Dorado County, on the south by Sacramento County, on the west by Sutter County, and on the north by Nevada County. This section contains the foothill and agricultural lands. Its shape is nearly a parallelogram, the southwest two thirds being on the plain proper and the northeast one third being the foothill and fruit district.

### TOPOGRAPHY.

The area of Placer County is 1,429 square miles, or 914,560 acres. Of this, 810 square miles are mountains, 450 square miles foothills, and the remainder valleys. The entire extent of the county faces toward the west, extending from an altitude on the plains in the western portion of the county of some 40 feet to over 7,000 feet at its eastern boundary line, embracing nearly every variety of climate known in the State. At the eastern boundary of the county, separating it from the State of Nevada, is Lake Tahoe, one of the most picturesque lakes in America. The topography of Placer County is as irregular as is its shape. Imagine the whole Atlantic Coast from Labrador to Tallahassee incorporated into one county, and one will have a fair idea of what may be found in Placer, exaggerated as to size, but not as to the great variety of climate, elevations, soils, and resources.

In fact, as to resources, the whole Atlantic seaboard can hardly equal the endless variety to be found within the borders of this single county, which rivals Florida in the quality of its oranges, excels New Jersey in peaches, equals the New England States in its granite quarries, and compares favorably with Maine in the quality of its lumber.

From an elevation of about 2,500 feet up to the summit of the mountains snow falls in the winter season, light at the lower edge of the line, and increasing in depth as it ascends the Sierra. Here is a strip of territory from the snow line up to an elevation of 3,000 feet, where the snowfall is not greater than in New England, and where the winter temperature is much higher. It is particularly well adapted to the apple, the pear, and a great variety of vegetables.

## CLIMATE.

At Auburn, the county seat, the average temperature for winter is 46.2°; for spring it is 56.4°; summer, 74.3°; autumn, 61.7°. The yearly mean of the maximum temperature at Auburn is 83.17°; at Colfax, 85.42°; at Rocklin, 84.33°.

The average annual rainfall at Colfax is about 46 inches, and at Auburn it is about 26 inches.

## SOILS.

The soil of the western or valley portion of Placer County, around Roseville, Lincoln, and Sheridan, is of the same general alluvial composition as all the soil in the great Sacramento Valley, and is well adapted to the growth of grain. Over 30,000 acres are annually devoted to wheat, barley, oats, and hay. The low foothills back of Lincoln are excellent for the grape, and many new vineyards are springing up in that locality. They produce table and wine grapes, and raisins of superior quality.

The soil of the valley lands is mostly a red loam, mixed with considerable clay in spots; that of the foothills is a gravelly red loam, in places light and sandy, and is excellent for the production of fruits. Farther up the soil changes to a red character with a slate bedrock. This, too, is very fertile. The agricultural region includes the valley and foothill lands all the way from the western boundary of the county to an elevation above Colfax. The foothills everywhere possess a soil which only needs cultivation. The granite soils around Newcastle are composed largely of clay, sand, soda, potash, lime, phosphorus, iron, and magnesia. The constant decomposition that is going on appears to be of nearly endless duration, and of such a nature as to render the soil almost inexhaustible. Artificial fertilization is entirely unnecessary.

For an irrigation water-supply Placer has three sources—the Yuba, Bear, and American rivers. Including its branches, the Bear River irrigation ditch is 200 miles in length. This system is now the property of the South Yuba Water Company, which has increased its capacity and brings water from the Yuba River, so that abundance of water is assured. There are several other canals originally built for mining but now used for irrigation.

## FRUIT CULTURE.

Placer County holds a foremost position among the fruit counties of the State, being the most easterly of the counties of California. With the Central Pacific Railroad running the entire length of her territory, she is one day nearer the Eastern market than any other part of the State, a very large item in the shipping of green fruit to market. In her thermal belt fruit ripens earlier than in most other places in the State, another large advantage to her. There is hardly any fruit in the entire range of production that will not grow in some portions of Placer. Pears, plums, prunes, apples, apricots, cherries, persimmons, pomegranates, quinces, and figs all do well. Peaches have been grown to some extent for the past twenty-five years, and in all that period a failure of a crop has been unknown. Fine oranges are produced, and Placer holds a position beside Butte in the northern citrus belt. In the pro-

duction of small fruits, berries, and table grapes, Placer holds a foremost place.

The chief fruit sections of Placer and the fruits to which they are especially suited are as given below: Loomis, peaches, figs, and grapes; Penryn, peaches, pears, plums, and grapes; Newcastle, peaches, pears, plums, cherries, and grapes; Auburn, pears, grapes, and peaches; Colfax, pears and grapes.

The largest cherry trees in the world are to be seen at the ranch of Robert Hector, from one of which has been picked as high as 3,000 pounds in one season. At the Pan-American Exposition, Placer carried off the gold medal for peaches, oranges, and grapes. An exhibit of fifty oranges averaged twenty-four ounces in weight.

A lemon, now on exhibition at the Sacramento Chamber of Commerce, measures 22 inches in circumference the small way and weighs three and a half pounds.

Olive-growing is a profitable industry in Placer County. The principal orchards are provided with manufacturing plants and are producing a very fine quality of oil. The first prize for olive-oil was awarded to Placer County at the Chicago World's Fair. In addition to oil, large quantities of pickled ripe olives are shipped, the demand for which largely exceeds the supply. Land suitable for olive culture can be bought for from \$15 to \$50 an acre. The trees begin to bear in about four years, and they will thrive without irrigation, provided the orchard is extensively cultivated.

#### DIVERSIFIED FARMING.

Diversified farming is practiced very generally in Placer. Wheat, barley, oats, alfalfa, and hay are raised in considerable quantities, there being close to 60,000 acres devoted to their production.

Dairying and stock and poultry raising are also extensive industries.

Butter-making is carried on in the summer, the mountain ranges providing plenty of natural feed; the butter is of a very fine quality.

Considerable quantities of vegetables are raised, not only for local consumption, but also for shipment abroad.

#### TIMBER RESOURCES.

Much sugar and yellow pine, fir, spruce, and cedar are found in the mountains, and the lumber output from that section has been very large for many years. Oak and scrub pine abound all over the foothills, and fuel is plentiful. The annual output of lumber amounts to over 16,000,000 feet, principally yellow and sugar pine, the latter being of the finest grade produced in California.

#### MINERAL RESOURCES.

Placer County ranks well up among the mining counties of the State. Her average yearly contribution to the world's wealth at this time is something like \$1,000,000, mostly gold. The total production since the discovery of gold at Auburn, May 16, 1848, is estimated at \$75,000,000. The mining methods in vogue include drift, river, placer, and quartz. The latter is yet in its infancy, while Placer's drift mines are among the largest in the world.

The granite quarries in Placer County rank with the best in the United States. Nearly all the street curbing in San Francisco is from the Placer quarries, while the State Capitol at Sacramento is an example of the value and beauty of foothill granite.

Potter's clay is found in abundance at Lincoln, from which is manufactured sewer pipe, tiling, pressed brick, architectural terra cotta, and glazed brick for interior decorating. Among the notable specimens of the latter none is more prominent than that to be seen in the interior of the Mills Building, San Francisco.

Placer County is a natural sanitarium. As a resort for patients suffering from pulmonary diseases leading physicians say it has no equal on the Pacific Coast. It is here patients find relief and some of them are cured. A resumé of the cases of sickness in which material benefit is attributed to Placer's beneficent climate would read like a leaf from a patent-medicine almanac. The altitude is just right for people suffering from consumption or bronchial diseases.

The returns of the United States General Land Office in the report of July 1, 1901, give 104,287 acres of unoccupied land in the county, describing the same as mineral, timber, and grazing.

## PLUMAS COUNTY.

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Plumas is a mountain county, and much of what has been said in describing El Dorado, Alpine, and Placer counties is applicable to Plumas. Mountain chains define its limits on several sides, its bounding counties being, on the north Shasta and Lassen, on the east Lassen, on the south Sierra and Butte, and on the west Butte and Tehama.

This county extends for a distance of 50 miles from north to south, and 75 miles from east to west, in the heart of the Sierras, having Lassen Peak, with an elevation of 10,577 feet, on its northern border, and Pilot Peak, 7,605 feet, and Spanish Peak within its boundaries. Between the parallel ridges and spurs of the mountain range there are some picturesque and fertile valleys. The Feather River and its tributaries, with their deep cañons that have cut down in places to a depth of over 2,000 feet, afford drainage to the county into the Sacramento River. It has less plains land than the counties lying to the south; but, on the other hand, Plumas County differs from the counties lying to the south of it in contour, the surface being more of a rolling character. A great deal of rich valley land is thus placed at the disposal of the husbandman. There is virtually no limit to the fertility of the soil in those valleys, composed as it is of the alluvial deposits carried down by the melting snows and the rains of centuries from the overhanging Sierras. Still, much of Plumas is up among the mountains, lying in the midst of the Sierra Nevada range. Some of its scenery is among the wildest and most picturesque in the State, snow covering the summits of the mountains, their slopes being clothed with magnificent forests of pine, fir, and oak trees, and high ridges alternating with abrupt chasms and deep cañons, through which tumble running streams. There are grassy valleys of considerable extent throughout the county, which are cultivated by agriculturists, among them being Big Meadows, Mountain Meadows, Indian, Genesee, American, Beckwith, Butte, and Meadow valleys. Big Meadows Valley, 15 miles long by 4 miles wide, is the largest of these mountain valleys, and is immediately adjacent to Mountain Meadows, of nearly the same size, and also to several smaller valleys, also cultivated, the whole constituting a plateau high up in the mountains, the elevation being 4,500 feet. Indian Valley, an important and prosperous district, is 11 miles in length by 2 miles in width; American Valley being the same size. Both connect with smaller valleys, and support several small towns, as well as the farms scattered over their extent. All these valleys are fertile, well watered and timbered, and contain an area of agricultural and grazing lands sufficient for the support of many thousands of people.

The greater part of Plumas County is located in the Sierra Nevada Mountains, and has the climate peculiar to that section. In the higher altitudes are long, cold winters, with heavy snowfall and zero weather. In the valleys the winters are much less severe, being only moderately

cold. The summers are perfect. Very hot weather is unknown, even in the lower valleys. The rainfall will average about 40 inches annually.

Where irrigation is needed Plumas has abundant water therefor. Mountain rills run down every cañon and ravine, and streams take their course through every valley. Two important branches of the Feather River rise in this county. The valleys are well watered, and are generally treeless. Pure mountain springs and streams abound, and are found very desirable for dairying and general farming. Many of the valley ranches are irrigated from mountain streams. Round Valley reservoir covers about 1,000 acres, and supplies water for mines and for irrigating the lands of Indian Valley.

Indian Valley is the largest grain-producing section of the county; it produces annually about 60,000 bushels of oats, wheat, barley, and rye. The oats raised in this valley average from 40 to 48 pounds per bushel, and the wheat and rye from 60 to 65 pounds. The average oat yield is about 55 bushels per acre, and of wheat the average is about 35 bushels per acre. This valley also contains a number of large dairies, averaging from 40 to 150 cows each. The butter is sold principally among the mines of Plumas and Sierra counties. The valley also produces annually about 7,000 tons of hay, which is fed to local stock and which number about 2,500 head. The average yield of hay is about three tons per acre.

American Valley produces a great quantity of grain of all kinds, and alfalfa and timothy hay; a great many cattle and horses are also raised. The average yield per acre is about the same as that of Indian Valley. Quincy, the county seat, is in this valley.

Butte Valley, Big Meadows, and Mountain Meadows are chiefly devoted to stock-raising and summer pasture. Big Meadows, which is situated at the head of the North Fork of Feather River, is a fine summer resort. The average yield of hay of the latter three valleys is over two tons per acre, of a high quality of timothy.

Many parts of Plumas County are especially adapted to deciduous fruits, apples and pears doing especially well. Plums, prunes, nectarines, and peaches also do well in many localities, and where favorable conditions exist the trees yield abundantly.

Currants, gooseberries, blackberries, raspberries, and strawberries grow in great quantities and to perfection.

The apple nowhere in the State grows nearer to perfection than in Plumas County, but fruit is only raised on a limited scale for home consumption. Railway connections would greatly increase the production, for no county produces finer flavored fruits than are raised in its mountain valleys. The lack of transportation facilities is a great drawback to the fruit as well as all agricultural industries.

Sheep and cattle are driven in annually in large numbers for summer pasturing; the mountains and their valleys affording abundant natural feed and water. The choicest article of mountain butter is produced.

Poultry and eggs are raised for home consumption and in quantities to supply the mining camps of Plumas and Sierra.

The magnificent virgin forests of sugar and yellow pine, fir, spruce, and cedar timber are of great size and value. The extension of the Boca & Loyaltan Railroad into the county to tap these great timber forests is now nearly completed, and the lumbering industry is rapidly coming to the front. Plans are being made for establishing one of the

largest milling and manufacturing plants in the State, and the same will, it is expected, be in operation in 1902.

Considerable mining for the precious metals is carried on, and both quartz and hydraulic mines are operated on a very large scale, and is one of the most profitable industries in Northern California.

The copper prospects of Plumas County are now attracting the attention of capitalists, and considerable prospecting work was done the past year, with a very encouraging showing, and there is no doubt that several of them will, when fully developed, prove to be large and profitable mines.

Iron, marble, asbestos, and other minerals exist in large quantities, and it only needs the influx of capital to open up the mining industries and bring Plumas County to the front as a leading and profitable mineral producer, exceeding in the near future the great yields of the precious metals that have been extracted in the past. The completion of the railroad into this county will, no doubt, be the means of interesting the requisite capital to develop the mining industry.

The last census gives the population of Plumas County as 4,657. The principal towns are Quincy, the county seat; altitude, 4,000 feet; has a bank, newspaper, and two mills. The other towns are La Porte, Prattville, Greenville, Taylorville, Beckwith, and Crescent Mills, all dependent on mining, stock-raising, lumbering, and dairying.

There are a number of summer resorts situated on the Feather River or its tributaries. Hundreds of campers pass the summer months here, the trout-fishing of Plumas being unexcelled. Big Meadows is one of the most famous resorts in the State for followers of angling. Game of all descriptions, of both fur and feather, is very plentiful, and excellent sport can be obtained in all parts of the county.

Prices of land are naturally very reasonable at present, but they will steadily advance, no doubt, on completion of the railroad. As it has been, teaming of all products and staging had to go by Chico or Oroville in Butte County to reach railroad connections, or by Mohawk and Sierra valleys to Truckee and Reno to reach the main line of the Central Pacific.

## RIVERSIDE COUNTY.

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Riverside County is bounded on the north by San Bernardino County, on the east by the Colorado River, on the south by San Diego County, and on the west by Orange County. It is one of the youngest counties in the State, being formed in 1893 from the southwestern part of San Bernardino and the northern part of San Diego.

The progress of the county is practically confined to its northwest corner, embracing the largest orange-growing district in the world. The rest of the county is largely undeveloped, a desert region that is believed to be a storehouse of the useful minerals and metals.

The past year has been one of exceptional progress and prosperity, and a considerable area of new land has been brought under cultivation. Many new orchards, both citrus and deciduous, have been set out. Alfalfa has also been planted on a large scale.

The orange crop in the county is the largest in the State, the output for the last season being 5,333 carloads, besides 250 carloads of lemons. The growing of citrus fruits is the main industry in the county at present, although deciduous fruits of most kinds do well, particularly apricots and prunes. The olive thrives and a very fine grade of oil is produced. Melons and cantaloupes are extensively grown and mature early.

New orchards, of both citrus and deciduous fruits of many varieties, are now coming into bearing and an increased crop of all fruits will be recorded the coming season.

Diversified farming is quite a feature in several sections of the county. Alfalfa grows very luxuriantly; broomcorn does well, and is a very prominent and profitable crop. The sugar-beet thrives, and considerable new land has been put in cultivation the last season.

Dairying is also a profitable industry, and modern creameries with the latest appliances are located in different sections of the county. The stock used for dairying purposes is of a very high grade, mostly pure-bred representatives of the milk strains.

Considerable stock and hogs are fattened for market. The poultry industry receives considerable attention.

Bee-keeping is another growing industry, and a fine grade of honey is produced.

The capacity of several of the city of Riverside's manufacturing establishments, including an iron works and wood-molding works, has been largely increased during the past year. The Riverside Machine Brick Company has installed a new dry-press plant, costing \$15,000, with a capacity of 25,000 bricks a day. Claude Hancock has installed on the Indian school grounds a \$10,000 soft-mud brick machine, with a capacity of turning out 40,000 bricks a day. In the early part of 1901 the city completed a \$40,000 steam power plant, to generate electricity for power and lighting purposes. The sewer system has been extended



and the streets extensively improved. A new public park and polo grounds on Magnolia Avenue are among the attractions that have been added to the city during the year. A branch of the electric road has been built and put in operation, extending from a junction with the main line at Main and Fourteenth streets, to Victoria bridge, a distance of nearly two miles. At the terminus of the line may be seen the splendid improvements made by the Chase Nursery Company on and surrounding Victoria Hill. During the past year, approximately 750 acres of land have been planted to oranges and lemons—200 acres in the Highgrove district, 250 acres in West Riverside, and 300 acres in Arlington Heights district. Last season 5,335 carloads of oranges and 250 carloads of lemons were shipped from Riverside.

The Riverside Water Company, chief of the companies that supply Riverside with its fine water system, embracing a continuous flow of over six thousand inches for the colony, has added to its irrigation system by boring two artesian wells, one of which is the deepest in San Bernardino County. It is 967 feet deep and has a flow of 187 inches; the other well has a flow of 100 inches. Three wells have been sunk on good pumping territory as an experiment, but have not yet been tested. The company has planted about 300 acres of new orange orchards and 100 additional acres of alfalfa. The domestic water system has been improved by the construction of a cemented storage reservoir, covered with an insect and dust-proof building. Three artesian wells sunk give an addition of forty inches of flowing water.

Highgrove, located three miles northeast of Riverside, is becoming an important fruit-shipping point. Both the Santa Fé and Southern Pacific railroads have stations here, and two large packing-houses will be in operation this season. Many new groves are coming into bearing and several hundred acres have been planted to oranges during the year. A free rural mail delivery service has been established.

In West Riverside, comprising a rich section of varied resources across the Santa Ana River from Riverside, a considerable acreage has been planted to citrus and deciduous fruits during the year. Last season about two hundred carloads of oranges were shipped from West Riverside groves. A score or more new residences have been erected in this section, which, like Highgrove, now enjoys the advantages of a free rural mail delivery service.

The government census of 1900 gave Corona a population of 1,434. The actual population is greater by several hundred. This is a prosperous and growing fruit center. Last season's fruit shipments amounted to 600 carloads, about equally divided between oranges and lemons. A large manufacturing plant is operated the year round, turning out vitrified sewer pipe, terra-cotta goods and pressed brick, made of a superior quality of clay found near by. A new water system has been put in operation during the past year, a large supply of water, ample for irrigating and domestic purposes, being carried many miles in pipes and canals. The honey business has assumed extensive proportions. A large acreage is planted to hay and grain in the vicinity. A number of new residences have been built and there is a demand for more. Three large fruit-packing-houses were erected during 1901. A new local corporation, comprising substantial citizens, representing a capital of \$100,000, has been organized to build a plant for the manufacture of fancy tiling, fire brick, and electrical goods, at a cost of \$25,000. A corporation repre-

senting large cash capital is being organized to build the largest cement works in the country.

In the large area of country embracing the Perris and San Jacinto valleys, the year 1901 has been one of progress.

The rapid development of Strawberry Valley as a health resort has done much to stimulate local trade. Idyllwild, a mile above the valley, among the pines, attracts visitors from all over the country. A large amount of money has been expended here in improvements. A considerable acreage of new land has been planted to deciduous and citrus fruits.

The importance of Perris as a commercial center and base of supplies for a mining district has been increased by the rapid development of water during the past two years, and the consequent large acreage of new land put under cultivation. Thousands of acres in this vicinity have been planted to alfalfa alone.

At Wildomar many olive orchards are just coming into bearing, and a plant is being installed for the manufacture of olive oil. A pickle factory has recently been put in operation.

Hemet has a large flouring-mill, fruit-drying plant, and broom factory in successful operation. The shipments of olives from this point have largely increased during the year. Fine raisins are produced in this section, and the grain industry is flourishing.

Moreno, whose progress for years has been retarded by a scarcity of water, will come into prominence this season as an orange-shipping point. It is believed that the season's shipments will not fall short of 100 carloads, and within a year 500 acres of oranges will be in bearing in the immediate vicinity.

The little settlement of Lakeview, with new people at the helm, promises to develop into a thriving community.

Elsinore, famed for the curative properties of its hot springs, has secured a better train service with the county seat, which will add to its popularity. The hotel has been extensively improved. Coal mines are successfully operated, and a superior quality of potter's clay is obtained in the vicinity. The domestic water-system is owned by the city. The water is supplied from hot sulphur wells, pumped into a 400,000-gallon reservoir, whence it is carried under pressure to every house in the city, furnishing all with soft mineral water at a nominal cost. Fine apricots, prunes, olives, and other fruits are raised around the lake. Seven miles distant is the Good Hope gold mine, with a 20-stamp mill and a cyanide plant. During the open season Lake Elsinore abounds with wild ducks of various kinds, making it an attractive place for sportsmen.

Murietta and Temecula, the latter the terminus of a branch of the Santa Fé road, Winchester and Menifee, continue to thrive and prosper.

The flourishing settlement of Ethanac furnishes a striking example of the possibilities of this section, as a result of the progressive work of the Chase Nursery Company, of Riverside, whose enterprise has wrought wonders in the development of the country hereabouts. Inside of two years, a modern and progressive colony has been established, possessing what is undoubtedly the most perfect and complete private irrigation system in the State. An immense quantity of hay is already grown in this vicinity. The colony has an electric plant of the most modern type, which is utilized to generate power for pumping and lighting purposes.

Broomcorn and sugar-beets, which were planted as experiments, have produced profitable crops. A dairy and creamery have recently been established in the vicinity.

Business is booming at Indio, the little health resort that lies below sea-level. A number of artesian wells have been developed recently, and much land in the vicinity has been taken up and placed under cultivation. Watermelons and cantaloupes are extensively grown.

An increased area of land has been planted to deciduous fruits at Banning and Beaumont, located near the summit of San Gorgonio Pass.

The returns from the United States General Land Office, July 1, 1901, give the acreage of unoccupied public lands in Riverside County as over 2,600,000 acres, chiefly mountainous, rolling, and desert.

## SACRAMENTO COUNTY.

By WINFIELD J. DAVIS.

Prepared by direction of the Board of Supervisors of Sacramento County.

Sacramento County is among the largest in Northern California; it is virtually the geographical and railroad center of the State. It is nearly as large as Rhode Island, and about from one half to one seventh of the area of some of the other Eastern States.

Sutter and Placer counties bound it on the north, El Dorado and Amador on the east, Dry Creek and the Mokelumne and San Joaquin rivers on the south, and the Sacramento River on the west.

The first civilized settlement in Northern California was in August, 1839, when John A. Sutter established his fort at what is now Sacramento City. The county was organized by the first Legislature; within its confines is the seat of State government; the annual fairs of the State Agricultural Society are held in Sacramento City, and from that city was projected the first overland railroad on the American continent.

### STATISTICS.

Area, 987.66 square miles, or 632,108 acres. Lands assessed, 1901, 608,002 acres. Total assessed valuation of all property, 1901, \$34,346,017. Total assessed value of mortgages and trust deeds, \$1,947,710. Bonded debt, \$404,500; annual interest thereon, \$18,395. Expended on roads, 1901, \$47,322.24. Number of miles of railroad, 93.25. Latitude, north 38 deg. 35 min.; longitude, west 121 deg. 30 min. Elevation above sea level at Southern Pacific depot, Sacramento, 31 feet. Population, census 1900: of county, 45,915; of cities and towns—Sacramento, 29,282; Folsom, 1,309; Galt, 783; Elk Grove, 361; Florin, 104; Oak Park, 2,500; Walnut Grove, 223; Isleton, 162; Franklin, 83; Cosumnes, 109. Number of registered voters, 1901, 11,792.

Number of acres sown for crop of 1901, according to the report of the County Assessor: Of wheat, 109,000; oats, 93,000; barley, 12,000; corn, 1,000; hay, 72,500. Number of acres of grapevines growing in 1901: For table, 5,000; raisins, 800; wine, 9,000; and, in addition, not assessed: under one year old, 1,050; under two years, 1,600; under three, 1,650; under four, 2,000. Number of fruit trees growing in 1901:

	Bearing.	Non-Bearing.
Apple.....	5,850	1,350
Apricot.....	26,000	38,000
Cherry.....	5,400	8,950
Fig.....	1,300	2,600
Olive.....	11,050	6,000
Peach.....	123,000	42,000
Pear.....	65,000	60,000
Prune (French).....	25,000	53,000
Prune (other kinds).....	30,000	79,000
Lemon.....	1,450	800
Orange.....	20,000	21,000
Almond.....	31,000	32,000
Walnut.....	2,000	1,500

School statistics of Sacramento City and County for the year ending June 30, 1901:

	City.	County.	Total.
Number of census children between five and seventeen years of age.....	5,964	3,383	9,347
Total number of children of all ages.....	7,892	4,591	12,483
Number of teachers employed, including high school.....	136	91	227
Number of pupils enrolled in grammar and primary departments.....	4,699	2,538	7,237
Average attendance.....	3,634	1,886	5,520
Number of volumes in school library...	2,500	24,851	27,351

## FINANCE.

	City.	County.	Total.
Amount paid for teachers' salaries.....	\$102,602 85	\$49,893 80	
Contingent expenses.....	16,476 80	12,932 64	
Amount paid for library.....	536 85	1,580 17	
Sites, buildings, and furniture.....	13,594 10	4,385 26	
Total expense for year.....			\$202,002 47
Valuation of school property.....	318,200 00	109,597 00	427,797 00

## HIGH SCHOOLS.

	Sacramento High School.	Elk Grove High School.
Number of teachers.....	11	2
Enrollment.....	326	30
Number of graduates.....	34	9
Teachers' salaries.....	\$11,725 00	\$1,800 00
Expenditures for year.....	14,035 20	2,238 33

## TOPOGRAPHY AND SOIL.

The area of Sacramento County is almost all a rich alluvial plain from 30 to 75 feet above sea level, gradually rising from the rivers to meet the low rolling foothills of the Sierra Nevada Mountains; these foothills commence at the extreme eastern part of the country, and are from 6 to 8 miles wide. There are no mountains within its confines, and aside from this foothill belt the surface has only gentle undulations.

The Sacramento River traverses the eastern boundary tortuously for about 90 miles across the rich bottoms, cutting them up at the lower part of the county into numerous small and several large islands. The Sacramento is the longest and largest river in the State, and is navigable from beyond Colusa to San Francisco Bay.

The American River rises in the upper Sierras, and enters the county at the northeast corner, among the low foothills. It flows in a southwest direction through the entire width of the county, a distance of some 35 miles, and empties into the Sacramento just north of the capital city.

Thirty miles south of the American is Dry Creek, at the southern boundary of the county. Midway between these two rivers, or 16 miles south of the American, the Cosumnes River flows out from the eastern foothills, and runs through the county southwesterly, and about parallel with the American, dividing the portion of the county south of the American into two nearly equal sections.

The Mokelumne River runs along a portion of the south line of the county. The section lying between the Cosumnes and the south boundary is again divided in about the middle by a watercourse known as the Laguna, that runs nearly parallel with the Cosumnes.

Geological indications prove that in remote ages the entire Sacramento Valley and a section of the foothills to an altitude of several hundred feet were portions of the bed of a vast inland sea or lake, and that into

this lake the washings of the surrounding mountains were poured to form the present soils, which are made up of all the fertile mineral and vegetable elements in almost inexhaustible quantities. Many assays have been made of these soils from the alluvial valleys, the upper lands, and the foothills; these assays have demonstrated that the soils of this valley are unexcelled for fertility.

Along the borders of the Sacramento River and around the islands is a belt of sediment land, partly a clayey, sandy loam, of great depth and unexcelled richness, varying in width from half a mile to a mile or more. This deposit has been formed by the overflowing of the stream for countless ages, and has produced a soil as fertile as that of the valley of the Nile. The same quality of soil exists along the lower reaches of the other rivers. The interior of the islands is a sedimentary deposit from the river and its tributaries, diversified occasionally by formations of peat along the lower reaches of the river.

Next to this belt of river-bank land is a strip of tule land considerably lower in altitude. This strip is quite narrow in the northern half of the county, but expands to a width of about fifteen miles at the south. All of these tule lands are naturally subject to overflow in the rainy season, and portions of them, and all of the islands, have been reclaimed and protected against inundation by substantial levees and drainage canals and pumping plants. These reclaimed lands are in a high state of cultivation to fruit, alfalfa, and vegetables.

Thence eastward the surface gradually rises to meet the low foothills, from whose spurs diverge broad, low ridges of reddish loam, gravelly near the hills, and these spurs are alternated with swales having a soil somewhat heavier and less deeply tinted. Southeast of Sacramento City these reddish loam lands are underlaid by a porous and soft material at from two to six feet, and this by an impervious clay.

The belt of foothills is rolling, interspersed with low hills, and its soils are red and gravelly clays, having a scattered growth of oaks.

#### CLIMATE.

A comparison of the climatic conditions of Sacramento County with those of the great Riviera and the citrus and olive belt of northern and central Italy demonstrates that this county leads that great winter sanitarium of the world. This county shows a warmer winter, spring, and yearly average temperature, and about the same summer and autumn temperature as that of the noted citrus belt of Italy, where it is said "perpetual summer exists, skies are blue, and the sun ever shines." The average number of clear days in this county is 244, being more in a year than for any other inhabited portion of the northern hemisphere, except Yuma. The lowest temperature ever reached here was 19°, and that occurred but twice in fifty years. Snow is unknown, except that about once in ten years there is a slight fall sufficient to measure, and which melts almost immediately. The average winter temperature, according to the United States Weather Bureau records at Sacramento, is 48.3°; average spring, 59.5°; average summer, 71.7°; average autumn, 61.5°; average yearly, 60.2°. The average annual rainfall is 19.94 inches. The winters are equivalent to spring in Ohio, Iowa, Kansas, central Illinois, Indiana, and southern Colorado.

In an able paper on the climate of California, General N. P. Chipman gave in substance the following description of that of the Sacramento Valley: In judging of climate there is nothing so misleading and inconclusive as tables of mean annual temperatures. The mean annual temperature here, where there is seldom a frost and rarely a hot day, is only about 5° higher than that of New York, where people perish both by extreme cold and heat. Mean temperature conveys but a slight idea of actual climatic conditions, and does not necessarily imply either high or low temperatures in summer or winter. The Siskiyou Mountains connect the Coast Range with the Sierra Nevadas on the north of the valley. This lofty battlement on the north, with that on the east, has much to do in warding off the arctic currents and deflecting them from the lower valleys. The Coast Range is higher toward the north than in the southern boundary of the State. It has a height west of the upper Sacramento Valley of 4,000 feet. This range is an important factor in affecting the climate of the upper interior valleys by shutting off the cool sea breezes of summer, as well as by modifying the winds of winter. These ocean breezes of summer, that blow almost constantly, are felt in the Sacramento Valley as they enter at the Golden Gate and follow up the valley. The chief modifier of our climate, however, is the Japan, or great equatorial ocean current, which is deflected northerly and easterly when it meets the coast of Asia. It there divides, and a portion strikes the northwest coast of North America, then turns acutely to the southeast, and flows along the west shore and past California and Mexico. This current has been found to start with a maximum temperature of 88°; at Alaska it is found to be 50.06°; eight hundred miles west of San Francisco, 60.38°; and one hundred miles west, 55.05°. Here is a body of water of an average temperature of 57.89°, and a thousand miles wide, that flows past our shores constantly. Observation shows that from this surface there flows an air current which rarely rises more than two or three degrees above the temperature of the water. This great aerial current that moves with the ocean stream largely determines the climate of California.

The valley climate is characterized by mild winters, warm summers (with occasional hot days), a dry atmosphere, and less rainfall than on the coast. The summers are practically rainless from the middle of May or the first of June to the middle of October or the first of November. The dryness of the atmosphere makes outdoor labor entirely comfortable, even when the thermometer registers 100°—and that is an extreme rarity. The summer nights are uniformly cool and agreeable, and assure refreshing sleep.

As a sanitarium the Sacramento Valley presents unusual attractions. The healthfulness is remarked by all comers. People from the East and West who come here to reside experience renewed vigor and life. It is an erroneous idea, sometimes entertained, that this mild climate begets that lassitude and indisposition to labor so common to tropical regions. That does not follow here. We engage, indoors and outdoors, in all the occupations found in the temperate zone, and with all the zest and ambition that distinguish the American people elsewhere. Another result of great economic value is that every day in the year is a comfortable working day. This cannot fail to impress the industrious and frugal who wish to utilize their capital, which lies largely in daily earnings. Considering our agricultural interests broadly, there is no

dormant or idle season, or a period when consumption eats away production, as in countries where severe cold paralyzes productive effort for half the year, or exhaustive heat restricts in a portion of the other half. Intelligent, diversified agriculture admits of no necessarily idle day, and no period without the possibility of adding the productive value of a day's work. With factories or the workshops the same is true. Less fuel, less clothing, uninterrupted work for the year, and greater comfort result from an equable temperature. There is, for the industrious man of moderate means, no more inviting country on the globe than the Sacramento Valley.

### IRRIGATION.

The water-supply of the county is unlimited and inexhaustible. The first and most important source is the Sacramento River. The bank lands ordinarily require no irrigation; but at such times as fruit-growers along the river need water it is either siphoned or pumped through pipes from the river by gasoline or steam engines. This river carries an abundance of water at all times, and if necessary the surplus could be utilized to irrigate a large area of the county.

The American affords an unlimited supply at all seasons of the year, and enough flows out of the county and to the ocean to irrigate all of the upper lands in the county, as well as to furnish an unlimited supply of power for manufacturing purposes.

The Cosumnes carries a large body of water in the rainy season, and maintains a good supply in the summer, sufficient to furnish ample for irrigation purposes, however extensive.

The Laguna has a good flow in the winter, and during the greater part of the year is quite a stream, but in the latter part of the season is generally dry.

Dry Creek is quite a prominent stream. It flows a strong volume in the rainy season, and in the driest part of the year gives an ample supply for the farmers along its banks.

The Mokelumne never runs dry, and the topography of the country is favorable to the utilization of its waters.

In addition to the numerous rivers and streams there is, underlying the entire area of the county, an inexhaustible supply of pure and excellent water for domestic and irrigating purposes. Throughout the greater portion of the county this subterranean supply is easily appropriated by means of a light lifting power. South of the American River the entire western half of the county has this supply within eight to ten feet of the surface, while east of that center the depth at which water is reached somewhat increases. By reason of this abundant subterranean water-supply the farmer or fruit-grower who wishes to irrigate his land may do so without being dependent on any canal corporation, and at a trifling cost. For instance, a windmill with two six-inch pumps, will cost about \$100, and has the capacity to irrigate five acres in fruit and is often made to answer for eight. Many mills so equipped are used for raising water from wells 18 to 20 feet deep, but gasoline or steam engines and centrifugal pumps are employed in most cases where the need of water is very extensive.



## AGRICULTURE—HORTICULTURE.

The first venture in agriculture in Northern California was by General Sutter in 1839. He received a concession of a large tract of land from the Mexican government, and located his fort near the junction of the American with the Sacramento River. His first wheat field was on a portion of the land now covered by Sacramento City. He planted the first grapevines and fruit trees, and practically demonstrated the unsurpassed fertility of the soil of the great valley in the north.

All of the lands of the county are practically arable, and there has never been a crop failure. The up, or red, lands in the eastern part of the county along the Cosumnes River and between that and the Mokelumne River and Dry Creek, and north to and beyond the American River, are devoted largely to the growing of grain and hay and to stock-raising and dairying, though fruit production is also very considerable where irrigation is practiced. Thousands of acres along the river bottoms and on the islands are used for the production of all kinds of vegetables, which are shipped East by the carload, and at times by the trainload. It is impossible to reach even an estimate of the vast quantities that are daily carried to the San Francisco markets by the various regular and trading steamboats which traverse the river. A great deal of this product is disposed of to the canneries in this and other counties. These vegetable lands along the Sacramento often command an annual rental of \$50 an acre.

Alfalfa grows luxuriantly without irrigation on all the rich bottom lands, producing from four to eight tons to the acre in the four crops that are cut annually. The average time between the cuttings is from thirty-two to thirty-six days, and for six months the fields are used for pasturage and dairying. The yield of alfalfa hay in 1901 can not be accurately estimated, but it was very large. It finds a ready market, and yields to the producer from \$8 to \$10 per ton.

Fruits of all kinds are produced on any land in the county, and particularly on the river bottoms and the islands.

The winter fruits are oranges, lemons, pomegranates, olives, and persimmons, which all ripen in November, December, and January. Oranges and lemons ripen here earlier than in the southern part of the State, and are always sold at fancy prices on that account. The Japanese persimmon grows to the size of apples. Olives are very profitable, both for pickling and for oil.

The spring fruits that mature and are marketed in April, May, and June embrace strawberries, raspberries, blackberries, and cherries. Every acre of tillable land in the county will grow the finest berries in profusion, and the crop is very profitable. There is a ready market for the product of 10,000 acres at remunerative prices, though only about 1,200 acres are so cultivated.

After picking his early fruits and collecting the returns, the fruit-grower has to attend to the early summer fruits: apricots, plums, peaches, pears, and nectarines. The first peaches are ready by the last of May, and apricots and the earlier varieties of plums ripen about the same time. From then until October there is no cessation in the picking and shipping of fruit. Peaches are very largely cultivated all over the county, but reach their greatest importance on the river bottoms and

island lands. From these districts alone hundreds of tons are marketed every day, during the season, both in California and in the East.

Apricots ripen early, and of all countries in the world California is the only one that has made a thorough success of that fruit, and in this county it reaches its very finest development in size, flavor, and productiveness. Much of this product is canned, and has the entire world for a market.

A large number of varieties of pears are grown, among them the Madeline, Bloodgood, Dearborn Seedling, Le Conte, Buerré Hardy, Seckel, Buerré Clairgeau, Beurré Bosc, Winter Nelis, etc.; but chief among them is the renowned Bartlett. This latter variety is shipped in large quantities to every city of any size in the Union, and is as well known in New York and Chicago and other centers of population in the East as it is at home. It grows on the rich lands of our rivers and islands in larger quantities and to greater size than anywhere else in the world. There has been no instance where an acre of Bartletts, on land suited to their cultivation, has failed, during the past twenty years, to yield a handsome income.

Plums are very profitable. They grow to a large size, and are shipped in vast quantities to the Eastern and home markets and to the canneries. Much of this product is pitted and dried in the sun for the market.

Apple culture is profitable, but this line has been neglected and would justify greater attention.

Nectarines do well, and are cultivated to a considerable extent.

In the fall the fruit products are apples, pears, grapes, quinces, prunes, and peaches.

Sacramento County is preëminently the home of the grape, and on the red lands of the plains it reaches its highest perfection, particularly with irrigation. The table varieties include the Tokay, Muscat, Black Prince, Morocco, Emperor, and Cornichon. They always bring first-class prices for shipment to the Eastern markets. These grapes are profitable at \$15 to \$20 per ton, but are usually sold at from \$40 to \$60. The wineries of the State handle quantities of some of these varieties.

French, or petite, prunes are a leading fruit. They are remarkably prolific, and when cured excel the imported article, and bring a much higher price in the markets of the world. They do well on any land that is suited for plums, and are readily cured for market.

Raisins are easily cured, the climate being peculiarly favorable.

Figs grow in any part of the county, but on the river bottoms they reach a great size, and are remarkably prolific. The common black fig requires absolutely no care; the tree is as hardy as the native oak. The first crop is usually sold green, but the second is allowed to fall to the ground, and when dried the fruit is sacked, and readily commands from 3½ to 5 cents per pound. The Smyrna, or "fig of commerce," has been introduced and successfully grown.

Almonds have long been found a reliable and profitable crop. Like the fig, the trees require little or no attention. They can be grown in any part of the county. There is never any trouble to market all that is produced, at very satisfactory prices; in fact, there is an ample field for more extended production of this standard nut.

The English soft-shell walnut has been demonstrated to be a profitable crop. Black walnut trees are extensively grown for shade and orna-

ment. Walnuts will, in time, become an important production in California. So late as the second of February our Federal governmental report from Marseilles, France, indicated that the exportations there had fallen off considerably, for the reason that American buyers are more disposed to purchase from the growers than through commission houses.

Peanuts of excellent quality are profitably grown on the bottom lands.

Broom corn is grown, as is also Egyptian corn—the latter making an excellent and cheap food for stock.

Hundreds of tons of beans of all kinds are produced on the river and island lands. The interior of Grand and Tyler islands is to a great degree devoted to their production.

Potatoes, both sweet and Irish, are grown in large quantities on the bottom lands; of the latter, the average yield per acre is from 100 to 150 sacks.

Licorice has been successfully raised at Florin on the red lands.

Several years ago sugar-beets were extensively grown near Brighton on the upper bottoms of the American River, and a sugar factory and distillery were established; but, while there was a demonstration that the beet could be successfully grown, the manufacture of sugar therefrom proved a failure at that time, because of the inexperience of the management.

Cotton and tobacco have been raised, but not in commercial quantities; and even the tropical banana is grown, but only experimentally.

Time of planting of staple products: December and January, wheat, barley; January and February, oats; February and March, corn, beans, peas, tomatoes.

Time of maturity: June, wheat; June and July, barley, oats; July to September, corn; May to June, beans; April to June, peas; May to July, tomatoes.

Time of maturity of fruit: Bloom—March, apricots, peaches, plums; April, pears, oranges, apples; March and April, cherries; January to March, almonds. Maturity—May to July, apricots, cherries, peaches; June to October, pears; June to November, apples; November to December, oranges; June to November, grapes; October, almonds; June and July, plums.

Time at which trees, etc., come into commercial bearing: Peaches, nectarines, and grapes, three years; pears and plums (considering varieties), two to six; apricots, three to four; apples, five to six; oranges and lemons, two and upward; prunes, two to five; figs, three to five.

#### SOME HISTORICAL NOTES.

The first good apple trees were imported from Oregon in 1849, but the varieties were few and the trees did not thrive. In 1852, a few trees were brought out by way of the Isthmus of Panama—the beginning, really, of successful cultivation of that fruit. In 1850 apples were sold in San Francisco that came from Van Diemen's Land, or Tasmania; now a considerable quantity of that fruit is shipped, among other places, to Australia from California. In 1847, Henderson Lewelling crossed the Rocky Mountains to Oregon with a wagon-load of well-selected fruit trees. That is said to be the first stock of fine varieties of temperate fruits on the Pacific Coast.

An orange tree began growing near Marysville in 1852. The first orange tree was planted in Butte County in 1859, and soon afterward another was set out at Oroville. The seeds from which these pioneer orange trees of Northern California grew were obtained from two oranges eaten in Sacramento. One was from Acapulco and the other from Italy. The trees had been growing five years in Sacramento, when they were transplanted. Sacramento is considered the primary home of the orange in Northern California. Not only were the two trees spoken of taken from here, but many of the oranges grown in Placer County in an early day sprang from a seed which Rev. N. R. Peck carried from Sacramento in 1862 and planted at his home in Ophir. It was not until 1874 that trees began to be planted for profit, and that it became generally known that their cultivation could be made a commercial success.

Some of the first peaches known in the market of Sacramento came from a small orchard at Coloma, the scene of the discovery of gold; the trees had been planted by Mrs. Wimmer, who had brought some pits across the plains, and in 1853 her little orchard produced quite a quantity of fruit. In 1854-5 she sold in Sacramento some forty or fifty peaches for 25 to 50 cents apiece. About the 20th of July, 1854, A. P. Smith, of the famous "Smith's Gardens," just east of Sacramento City, on the American River, brought to that city six peaches which he had raised in his orchard, and they were sold by W. R. Strong for \$2 apiece.

Tobacco was first raised at Sutter's Fort in 1841-2 from seed sent out by W. G. Ray, of the Hudson Bay Company, to General Sutter as a present.

#### FRUIT SHIPMENTS.

Sacramento City, by reason of natural advantages, geographical relations to various producing sections, and admirable transportation facilities, deservedly bears the reputation of being the largest fruit and vegetable shipping point in the State. It is the recognized outlet for the products of Northern California. Within the borders of Sacramento County every character and variety of agricultural, horticultural, and viticultural products thrive, and in abundance; their excellence commands universal and unlimited demand from many portions of the civilized world.

The fruit crop of 1901 was one of the largest known in the history of the county. As characterized by producers and shippers, it was the banner year, so far as production and remuneration were concerned. And in truth this remark applies to the State, for the value of the exported horticultural products exceeded the combined yield of our gold and grain. The value of the fruit crop of the State for 1901 is conservatively estimated at more than \$40,000,000. At one time wheat was the staple production, but of recent years there has been a marked decrease in that line, and lands that had been devoted to its growth are now used for fruit and grapes, with much more advantageous results. Referring to the fruit product of the State of California of 1901, George B. Katzenstein, manager of the Earl Fruit Company, said:

"The figures, about \$40,000,000, are but an approximation, but when the year's record is completed and computed, you will find them conservatively made, and indeed, if anything, underestimated. For con-

venience I have used round figures, and for a better understanding have reduced them to carloads, as follows:

Fresh citrus fruits .....	600,000,000 pounds, or 25,000 carloads.
Fresh deciduous fruits .....	175,000,000 pounds, or 7,000 carloads.
Canned deciduous fruits .....	135,000,000 pounds, or 2,700 carloads.
Dried raisins .....	75,000,000 pounds, or 3,100 carloads.
Dried prunes .....	60,000,000 pounds, or 2,500 carloads.
Other dried fruits .....	60,000,000 pounds, or 2,500 carloads.
Dried figs .....	5,000,000 pounds, or 200 carloads.

"While many of these products are more valuable, an average worth of \$1,000 per carload would more than produce the figures I have made. Nor have I included our nut crop, which I estimate as follows:

Walnuts .....	14,000,000 pounds, or 640 carloads.
Almonds .....	2,500,000 pounds, or 100 carloads.

"And so we might go on and add olives and other products of smaller present value for thinking to fill in the interstices of the estimate. It will be observed, therefore, what gigantic proportions the fruit industry of California assumes when it is figured out. And the end thereof is not yet, as it is now only well started."

During 1901, 1,250 carloads of green deciduous fruits were shipped from Sacramento County, each car averaging from twelve to thirteen tons. These shipments were distributed in every quarter of the United States, Canada, and Mexico, and a large quantity was marketed in London, Glasgow, and other European cities. In the East, Chicago, New York, Boston, Philadelphia, Pittsburg, and Montreal are regular auction points at which fruit is sold for consumption there and in surrounding cities and towns. Between here and those auction points our fruits are sold on the f. o. b. plan, the dealers buying one or more carloads; and thus the distribution is practically all over the United States.

This fruit consists of all the deciduous varieties, such as apples, apricots, peaches, pears, plums, nectarines, and all the varieties of shipping grapes: Muscat, Tokay, Emperor, Cornichon, Ferrara, Verdel, and others.

The highest priced fruit in 1901 was the Bartlett pear. Each pear was a "golden nugget," and sold in the Eastern auction markets at an average of more than \$2 a box. The Sacramento River district is peculiarly the home of this magnificent pear, and from that district alone 125,000 boxes were shipped during the season. The demand for this pear is unlimited, and the California product is without competition in the markets of the world. What we know and sell as the Bartlett pear originated in France, and came to us through English sources. Under our favorable climatic conditions it has outstripped the parent tree, and we are shipping the fruit back to the country of its nativity in a state of greater perfection. In the London market California Bartletts in half boxes of twenty-five pounds each are sold for \$2.50 or \$3.00. The freight costs about 85 cents, so that the profit is handsome.

Plums and peaches in twenty-five-pound boxes find ready sale in England and Scotland. The fruit reaches the European market in perfect condition, being specially packed and carefully refrigerated. It is landed and marketed in London and Glasgow within three weeks after leaving Sacramento.

A remarkable record was made in cherries in 1901. They sold in the Eastern markets higher than ever before, many lots bringing

75 cents per pound in bulk. It is not unsafe to say that the entire California cherry crop that was marketed in the East sold at an average of \$1.50 a box, or 15 cents a pound.

It may be said that the production of citrus fruits in Sacramento County is in its infancy. Oranges grow on any of its soils to perfection, and in late years extensive orchards have been planted. The establishment and phenomenal success of the colonies at Orangevale and Fair Oaks, where land of supposed inferior quality has been demonstrated to be peculiarly adapted to citrus and deciduous fruits of all kinds, were incentives to the planting of fruit trees, and a very considerable area of the county that had been devoted to grain-raising and grazing has been planted in orchards. From 75 to 100 carloads (362 boxes to the car) of oranges were sent out in 1901. Large quantities were also sold locally in Sacramento and San Francisco. They go to the latter city by steamboat, by express, and by train. It is safe to say that there are, in orchard form, from 75,000 to 100,000 orange trees in the county. The dividing of large holdings, now being made, means that a great many more will be added.

The production of lemons and grape-fruit is not nearly as great as the demand warrants, although they do fully as well as the orange, and can be raised on any of our lands. At Fair Oaks and Orangevale particularly fine specimens of both of these fruits are produced, and in a short time they will become an important industry.

#### DRIED FRUITS.

We are indebted to Castle Brothers for an estimate of the amount of dried fruits produced in Sacramento County in 1901, and for other matters of interest in connection with this character of product. This firm handles most of the dried fruit produced in the county, and indeed a large part of that produced in the State. The product of this county last year, of dried peaches was about 800,000 pounds; of pears, about 300,000 pounds; of apricots, about 200,000 pounds; of nectarines, about 8,000 pounds; of pitted plums, about 12,000 pounds; of apples, about 250,000 pounds; of figs, about 30,000 pounds; and of French prunes, about 1,000,000 pounds. These are all sun-dried by the growers; artificial evaporators not being used at all. The dry atmosphere is specially suited for the drying of fruits, and the article so produced is regarded as first class in the markets of the world. The prunes raised on the American River are the finest in the world, and are everywhere so regarded. Recently large consignments were loaded for Ireland, Scotland, England, and Denmark. They are also sold all over the United States and Europe. The foreign trade is large. A very respectable portion of the product goes direct to France, astonishing as that might seem. In 1900 ten carloads were shipped to Paris direct from California in a single consignment. Last season Hamburg was the principal foreign market. The producers received for their dried peaches in 1901 an average of over 5 cents per pound, cash in hand at the bins in the orchards; for their prunes, an average of over 3 cents net; for their apricots, an average of over 8 cents net; for their apples, an average of about 3½ cents net; and for their nectarines and pitted plums, about the same as for peaches. About fifteen carloads of raisins were shipped out of the county during the last season.

All of the fruits named find a ready market all over the world. The figures given above for the past season are not to be considered as a fair estimate of the average yearly production, from the fact that the green fruit market was very active and took larger quantities than ever before at gratifying prices, and the consumption by the canneries was greater than in any former year. The output, especially of prunes, in 1900, was nearly double that of 1901. In 1900, Castle Brothers handled 100 twelve-ton cars of prunes, as against 40 fifteen-ton cars in 1901. In the opinion of experts the climate of this county is especially favorable for the production of peaches and prunes, where the proper varieties are planted, and a partial failure is seldom known.

About 200 tons of almonds of superior quality were produced, and about 25 tons of walnuts. For the almonds the producers received an average of over 9 cents per pound, and as high as 12½ cents for the choicer varieties, cash in the orchards.

### THE CANNERIES.

There are three canneries in the county. Two of them are branches of the California Fruit-Canners' Association—one located in Sacramento, and the other at Trask's Landing, on the Sacramento River, about 26 miles below the city. These are two of thirty-two plants owned by the Association at various points on the coast from Los Angeles to Portland, Oregon. A third cannery, belonging to the Central California Canners, commenced its operations in 1901. This company has an extensive plant in Sacramento City, and, like the others, did a prosperous business during the season. These three canneries sent out a pack of about 200,000 cases last year. In the packing season some 1,500 persons (men, women, and children) are employed. The cannery at Trask's Landing packs asparagus only, and its output was about 30,000 cases in 1901. The packing of asparagus begins on the 15th of March, of strawberries about the first of May, of cherries the first of June, of apricots and blackberries about the middle of June, of peaches and pears about the middle of July, and of tomatoes the middle of September. Plums and other fruits and produce are also packed. The packing continues from the 15th of March until the 20th of October. The Central California Canners does not pack asparagus, but handles all other character of produce. The Sacramento cannery runs longer than any other in the association. The average prices paid to growers are: for peaches and pears, \$30 per ton; plums, \$20; apricots, \$25; asparagus, 3 cents per pound; cherries, 5 cents per pound. In this county about 300 acres are cultivated in asparagus, and the total pack last season was in the neighborhood of 60,000 cases, but large quantities are sold in the markets here and in San Francisco. The returns per acre are about \$300 gross. The fruit and vegetables packed at these canneries are marketed all over the world, being shipped to China, Japan, India, Europe, Mexico, Alaska, and to all points throughout the United States. There are not enough blackberries and strawberries produced and available to supply the demands of the canneries, because of the large quantities that are shipped in the fresh state.

## STOCK-RAISING AND DAIRYING.

Sacramento County presents great opportunities to the livestock breeder and the dairyman. The climate is so even, temperate, and mild that animals remain in the open air, practically unsheltered, the year round without hardship. The soil, because of its richness, is peculiarly adapted to the growth of forage crops, especially alfalfa, which is at the same time one of the best and the cheapest of stock feeds. Because of the economy with which livestock can be maintained and the cheapness with which food can be produced, there is a large margin of profit in breeding and rearing farm stock. Animals mature early and produce heavily, and their judicious breeding has been profitable.

There are many extensive creameries in the county, with a considerable butter and cheese output. It is estimated that the butter production of the county is 25,000 pounds per week, and the butter sells at an average price to the producer of over 20 cents per pound.

The average character of the dairy stock in the county is fair, and is being constantly improved by the introduction of well-bred animals. The average production of butter per cow per year is not high, but the conditions here are favorable for a very large product. The breeding of pure-bred pedigreed cattle is engaged in by several persons in the county, but not as extensively as the profits of the business would seem to render advisable. There is a good field in Sacramento County for a breeder of pure-bred dairy animals.

The dairy product of California has heretofore been quite insufficient for the supply of the home demand, and as a consequence better cheese as well as eggs and cured meats have been imported. This short supply has insured profitable prices. Butter manufactured in creameries in Sacramento County has been sold in Alaska, British Columbia, Washington, Oregon, Idaho, Montana, and Arizona, with some few shipments to the Philippine and Hawaiian Islands, China, and Japan. Most of the cheese is produced in the southern portion of the county, on the Cosumnes River, where there are eight factories. The product is sold at an average price of from 9 to 11 cents per pound, and amounts to about 25,000 pounds per month.

While the farmer as a rule raises more or less stock, the production of beef cattle is not sufficient to supply the demand for meat in the county, and most of the beef comes from the northern coast, principally southern Oregon. What stock is produced finds a ready sale at good prices.

Sheep are raised in the section north of the American River and in the southern and eastern portions of the county. From May to October these sheep are pastured in the mountain ranges of the Sierras. There are estimated to be about 100,000 head of sheep in the county.

Hogs are raised generally by the farmers, and several breed pedigreed Poland-China, Berkshire, and Essex swine quite extensively. The breeding of pedigreed hogs has been very profitable.

The conditions are very favorable to the raising of poultry, which business is very remunerative. At Elk Grove poultry-raising is made a specialty, where, on one five-acre tract, three or four thousand chickens are maintained. Many persons in the county breed fancy poultry—all the leading varieties being represented. The conditions are so favorable to the raising of poultry that the business could be made very profitable



on a small outlay of money. Owing to climatic conditions, they require comparatively little attention; the market is convenient and prices are always remunerative.

### STOCK FARMS.

No State in the Union has more complete and valuable natural advantages for the growing of stock than has California, and it can not be long, if present indications mean anything, when she will take precedence, even of the far-famed Kentucky, in the number and extent of her foaling farms. Indeed, it has come to pass that no race in the broad East, from New Orleans to New York, is considered worth material attention unless it has one or more representatives from the great stock farms of the Golden State. It is with peculiar pride that the people of Sacramento County call attention to the fact that the most famous stables of the State are within her borders. Located in this county, and only a few miles from the State capitol, is the largest stock farm devoted to thoroughbred horses in the world. Reference is particularly made to the great breeding farm at Rancho del Paso, to the north of the city of Sacramento. Here the thoroughbred and trotting and draft horses are brought to their highest degree of perfection, and all over the nation their fame has gone. The State of Kentucky can not, in its highest glory, boast of so far-famed and extensive a breeding farm as this. California has other noted stock farms, and it may be said, with a bold challenge to all disputers, that they are not to be excelled by the best in England or America. And why should not this be true? Here is the most superb of climates; here can be grown the choicest of feed; here there is every incentive in the realm of nature for the production of the highest types of the breeder's skill. The days are rare or never come when the finest horses may not be exercised, and the climate is likewise decidedly in favor of the fast possibilities of the young and growing animal.

The Rancho del Paso, five miles north of Sacramento City, contains 44,000 acres. John Mackey is the superintendent, and it is since he assumed its management that Rancho del Paso began to take the foremost position it now commands. The trotters and thoroughbreds are kept in different parts of the farm, and good exercising tracks are maintained for both. The horses from Rancho del Paso that have been heard of in the East are too well known to need mentioning, and it is enough to know that they have gallantly maintained the claims of Sacramento County as the bright particular spot in California for the development of the finest thoroughbred horses. The annual sales of these horses at home, in the East, and in Europe have come to be considered great opportunities for lovers of the horse, and the prices realized satisfactorily demonstrate this appreciation.

The splendid Rancho del Rio, four miles south of Sacramento City, is also well known. No site could be more delightful. The stables, track, and residences are situated on a knoll rising several feet above the surrounding ground. This farm was established by Theodore Winters, who bought the unbeaten Norfolk for \$15,001, and thus laid the foundation for a stable which became famous. From this ranch came some of the best horses known to the turf, such as the Emperor of Norfolk, El Rio Rey, and many others of high class. It was the home of Joe

Hooker and the grand broodmare Marion. The present lessees, Burns & Waterhouse, have a select few which they breed for their own use to race, and not for the market. M. C. Hubbell is the superintendent.

The County Down Stock Farm is owned and managed by Thomas Fox. It is located three quarters of a mile east of Sacramento City, and has been established only about four years. The leading stallion is imp. St. Avonius, a son of St. Savior.

In Sacramento City, at the grounds of the State Agricultural Society, is the fastest and best track in the State, one that is a great favorite with horsemen ambitious to make a record for their stud.

### PRODUCE.

The following is a careful, and, we believe, conservative, estimate of the produce crops of the county in 1901: Of potatoes, the production was fully 1,000,000 sacks; shipping season commences the first of May; marketed throughout the entire section west of the Mississippi River and the Great Lakes; prices paid to producers by shippers, 65 cents to \$1.25 per hundred pounds.

Cabbages (raised all the year round), about 150 carloads; shipped from May to July to above markets; prices to producers, from 50 cents to \$1 per hundred pounds.

Onions, about 250,000 sacks; shipped from June to November to above markets; prices to producers, from 65 cents to \$1.25 per hundred pounds.

Beans, about 1,000,000 sacks; harvested in September and October; shipped all over the United States and universally abroad; prices to producers, from \$2 to \$2.75 per hundred pounds.

Root products—carrots, turnips, and beets—about 150,000 sacks; sold mostly in this State.

The butter product is mostly sold for State consumption. Cheese is extensively manufactured, and a considerable quantity is exported. Eggs are disposed of in the California markets, though at certain seasons are shipped in carload lots to the Western States.

Asparagus, cauliflower, radishes, celery, lettuce, and other vegetables are produced in enormous quantities. They are mostly for local and State consumption, although some is shipped East in mixed carload lots.

Most of the tomatoes are used locally and by the canneries. Considerable, however, is shipped in carload lots to the Western States.

### GRAIN AND HAY.

The estimates of the grain production of the county are based on the reported acreage planted, the number of sacks sold, and the statements of buyers and producers. They are approximately correct. Of wheat, the production in 1901 was about 800,000 sacks; of barley, about 170,000 sacks; of oats, about 200,000 sacks; and of corn, about 16,000 sacks. The number of tons of hay produced was about 50,000; the prices realized by producers were from \$8 to \$10 per ton.

## WINES AND BRANDY.

There are nine wineries in the county—the California, Kohler & Van-bergen's, Nevis's, and the Eagle in the city; one at Elk Grove, one at Bruceville, one at Folsom, one at Orangevale, and one at Natoma. The product in 1901 was 100,000 gallons of sherry, 250,000 gallons of port, 50,000 gallons of angelica, and 200,000 gallons of claret. Of brandies, 50,000 gallons were produced. The output is shipped all over the world, and is principally disposed of in the United States, Central America, and the Islands. The average price paid to the growers for the grapes was \$20 per ton.

## HOPS.

Along the Sacramento, American, and Cosumnes rivers are the most productive hop fields in the United States. Hop culture on this coast dates back to 1858, when the first roots were imported from Vermont by Daniel and Wilson Flint and planted in Alameda County. Hop culture developed slowly, because of the prejudice of brewers against a hop that contained so much greater percentage of strength than that which they had been accustomed to use; but in time they found that it did not take as much for a brewing. It was early demonstrated that the soil and climate of Sacramento County were unsurpassed for hop culture, and that it is the only place known where a crop of from 1,000 to 2,000 pounds per acre can be grown the first year the roots are planted. It is a common occurrence to grow 2,000 or 3,000 pounds on an acre of ground, and in some instances 4,000 pounds. The cost of picking is from 80 cents to \$1 per hundred pounds; 28 or 30 pounds of dried hops are obtained from 100 pounds of green, and a bale averages from 180 to 200 pounds. From the stock imported by the Flint brothers the roots in Oregon, Washington, and throughout California were obtained. In one year \$3,000 worth of roots were sold from their yards. In 1901, 1,255 acres were planted in hops in Sacramento County. The average price realized by the growers is from 8 to 10 cents per pound. The crop is shipped to all parts of the world, but is consumed principally in the Eastern States and England. About 6,000 bales are used by the local market. Hop land is held at from \$150 to \$500 an acre, and some of it is not for sale. The total number of bales produced in Sacramento County in 1901 was 10,800.

## RAIL AND RIVER TRANSPORTATION.

Few counties in the State contain a greater mileage of railroads than does Sacramento County. From the capital city the Central Pacific leads eastward across the continent; the California & Oregon passes to the north into Oregon, and from thence to Washington, and also to the Eastern States; the Western Pacific, which terminates at Oakland, connects also with the Southern overland line at Lathrop, and at the flourishing town of Galt a branch line runs up into the rich county of Amador; the California Pacific runs on the west of the Sacramento River to Oakland; and the Sacramento & Placerville passes along the American River through Folsom, and thence into the historic county of El Dorado. From most all of these roads branches extend into the

various counties of Northern California. From its geographical position, Sacramento City is the natural railroad center of the central and northern portions of the State, and the agricultural and mineral products of this great and rich section of the American Union are shipped from her ample storehouses.

The Southern Pacific Company operates two steamboats that make daily trips between Sacramento and San Francisco, touching at the various towns and farm landings to receive and discharge freight.

The Sacramento Transportation Company operates eight steamboats and twenty-five barges that are run between Red Bluff and San Francisco. They touch at all landings, and move a great part of the grain that is produced in the up-river counties, as well as all other kinds of freight.

The Farmers' Transportation Company started operations last year. It is controlled by an association of farmers. It has one steamboat (the Valletta) that runs between Colusa and San Francisco, making weekly trips; she also touches at all landings, and has moved a considerable amount of freight during the season.

### MANUFACTURES.

Sacramento City, being the center and metropolis of the richest portion of the State, the heart of a vast railroad system, the point from which steamers pass to the north and to the south, and with unlimited water and electrical power at her very doors, presents advantages in manufactures equaled by no other city on the coast. Here are located the extensive shops of the Southern Pacific Company, where 3,365 men are employed, and in which the company builds its own cars and general rolling stock, and does its own repairing. These shops occupy some twenty-five acres. Four flouring-mills are operated—three in the city and one at the town of Brighton near the American River. The city mills are run by electricity, and that at Brighton by steam, with oil fuel.

The Sperry Flour Company (Pioneer Mills) in 1901 manufactured 180,000 barrels of flour and 1,200 barrels of meals; also 4,000 cases of germea of eighty pounds to the case, and 18,000,000 pounds of feed. The flour product is sent to China, the Hawaiian Islands, Japan, and the Philippines. The Oriental trade is handled through a branch house at Hongkong. About one-half of the flour made is consumed in California.

The Phoenix Milling Company in 1901 manufactured 75,000 barrels of flour, 5,000 barrels of meals, and 8,000 tons of feed. Most of the product is disposed of in California.

The Valley Milling Company commenced operations July 27, 1901. The capacity of its mill is 80 barrels of flour a day, and 10 or 12 tons of barley.

The mill of the Brighton Milling Company at Brighton was established in July, 1899, and has a capacity of 125 barrels per day. In 1901 it manufactured 33,000 barrels of flour, and from 1,500 to 2,000 tons of feed. The product is disposed of all over the State.

The millers have several advantages of location. Wheat can be bought here as a rule at a dollar a ton less than the ruling rates in San Francisco, and consequently the flour can be produced cheaper. Much

of the grain is hauled to the mills by the farmers in wagons, or is brought down the Sacramento on large barges. Power is cheap.

There are two large breweries in the city. The City Brewery manufactures steam beer, and in 1901 produced 50,000 barrels that were disposed of all over California, Nevada, and Oregon. The Buffalo Brewing Company has one of the largest and most complete lager beer plants on the coast, and last year it turned out about 50,000 barrels that were shipped to all parts of the coast.

The manufacture of brick is a very important industry. The supply of the best soil to be found anywhere for the purpose is inexhaustible, and Sacramento County brick has a name all over the coast.

The Capital Manufacturing Company, at Sixth and H Streets, has a factory that is equipped with the latest modern machinery, and it manufactures all kinds of furniture. Its factory is run by electrical power, and in its employ are twenty-seven men. In 1901 the volume of its manufacture was \$164,600, and the product was sold locally and in other parts of California, Nevada, and Oregon.

Among the prominent manufactories of Sacramento is the Schaw-Batcher Company Pipe Works, located at Fifteenth and B streets. Here the company has erected substantial iron buildings, which cover about half a block. The business consists in manufacturing riveted iron and steel pipe for irrigating, mining, and power purposes. The works during the past year employed from fifty to seventy-five men steadily. The output for 1901 was over fifty miles of pipe, ranging from four inches in diameter up to six feet, in the manufacture of which was used over three million pounds of steel. The works are equipped with all the latest devices in improved machinery, and they are manufacturing pipe ranging from the thinnest sheets, for the conveyance of air, up to pipe five eighths of an inch thick, for power plants working under great pressure. The company takes contracts to make and lay power lines, and has the credit of having installed some of the most important electric power lines in the State, among which are the following: Central California Electric Company, Auburn; Central California Electric Company, Newcastle; Keswick Electric Light and Power Company, Shasta County; Tuolumne Water and Power Company, Sonora; Columbia Electric Power Company, Tuolumne County; Bay Counties Power Company, Brown's Valley; Big Creek Power Company, Santa Cruz; Copley Electric Power Plant, Shasta County; Jumper Power Plant, Quartz Mountain, Tuolumne County; Placerville Electric Light and Power Company; Bell Electric Company, Auburn; and many other heavy lines. The company sends its products all over California, Oregon, Washington, British Columbia, Alaska, Idaho, Utah, Montana, and the Hawaiian Islands.

The A. T. Ames Pump Manufactory is located at Galt. The works are the largest and best equipped of their kind west of the Rocky Mountains, and the only works on the Pacific Slope devoted exclusively to the manufacture of deep-well pumping machinery, hydraulic machinery, hydraulic packings, etc. The principal product of manufacture is the Fulton deep-well pump, which was designed in the shop of Mr. A. T. Ames and is distinctly a California product. Two styles of this pump are built—the variable motion double-plunger type, and the single-acting type. The Fulton variable motion double-plunger pump has been in use for over five years, and fills a place not occupied

by any other pump on the market. The products of Mr. Ames's shop have found a market wherever pumps are used, and the increasing demand for them is convincing proof that they give entire satisfaction. He has been compelled in the last year to increase the facilities for manufacturing his goods to keep pace with his growing trade, which now extends from Washington to Texas and to the Hawaiian Islands and Australia.

The Mohr & Yoerk Packing Company employs fifty-two men. In 1901, 11,000 hogs were killed; live weight, 2,200,000 pounds; cost, \$126,500; price paid for live hogs, from  $5\frac{1}{2}$  to  $6\frac{1}{2}$  cents per pound. These hogs were all purchased in Northern California—Sacramento, Yolo, Colusa, Glenn, Sutter, Solano, Butte, Tehama, Yuba, and Amador counties, with a small number from other counties. More came from Glenn than from any other county, and presumably the raising of swine is made more of a specialty there. The Sacramento County hogs are, however, superior to those raised elsewhere, and particularly is that the case with those from the Cosumnes, where the excellent quality of the corn contributes to the production of the finest quality of pork. On the arrival of the hogs at the stockyards of the company they are inspected by the Government inspector appointed by the county, and his decision is final. Beating or otherwise exciting or disturbing the animals is strictly prohibited. After killing, the carcasses are hung in the chill-room for twenty-four hours in a temperature of  $35^{\circ}$  Fahrenheit, and then hauled to the packing-house, where they are cut up and trimmed into hams, shoulders, and sides. These are packed in tierces and large tanks and covered with sweet-pickle until cured; then, hung in the smokehouses and smoked for three or four days. All of the smoked meats are branded "Columbia." They are marketed in Northern California, and a small quantity in Nevada. In 1901 the pack consisted of 22,000 hams, weighing 264,000 pounds; the same number of shoulders, weighing 220,000 pounds; the same number of sides of bacon, weighing 451,000 pounds; and of lard, 385,000 pounds. Other products of weight 500,000 pounds, such as pickled pork, pigs' feet, fertilizing material, etc., were also output. Of fertilizer, about 200 tons was manufactured, and the supply is by no means equal to the demand. The material is disposed of in the northern part of the State and in the Hawaiian Islands.

But the great and overshadowing superiority the city possesses is the unlimited cheap power that is afforded. For years the great power of the swift-flowing American was allowed to go to waste, but in 1888, at the Folsom State Prison, twenty-two miles from Sacramento City, a mighty granite dam was constructed across the river. At that point solid bluffs of rock rise on either side, affording a splendid site. The corner-stone for the structure was laid September 14, 1888, and the work was vigorously prosecuted. The greater portion of the work was performed by the State's convicts. The dam has a base of 87 feet, is 89 feet high, 650 feet long, and 24 feet wide at the top. A wing 130 feet wide turns the water into a canal 40 feet wide at the bottom and 50 at the top and 8 feet deep, that extends to the town of Folsom, a distance of about a mile and a half, giving a fall of fully 70 feet at that point. The natural fall of the American gives as great a force as any other stream west of the Rocky Mountains, and the artificial assistance rendered by the dam creates added power. From the canal the water falls upon turbine wheels. Five large generators produce the electric power, and it is transmitted to Sacramento City by four circuits on two sets of

poles, so as to guard against breakages and accidents. The current is received at the substation at Sixth and H streets, and from thence transmitted over the various circuits in the city. The distance of the generators from Sacramento is 22.4 miles. The Sacramento Electric, Gas, and Railway Company receives and controls this power. Each of the five generators produces one thousand horsepower. In addition, the company receives current at 40,000 volts from the Bay Counties Company power plant that is located on the North Yuba, 35 miles above Marysville. This power is transmitted to Sacramento over a circuit 64.2 miles in length. With the combined power so received the street car lines of the company in Sacramento City and suburbs are operated. These lines are 24.5 miles long, and are regularly traversed by twenty-one cars, with four extra cars when demands of business require. The public lighting of the city is from this source. The company supplies eight hundred arc lights for street and commercial purposes and thirty-five thousand incandescents. It also furnishes an aggregate of over three thousand horsepower for manufacturing purposes in and about the city, including printing offices, machine shops, elevators, planing-mills, flouring-mills; also, irrigation and dredging plants, and many other industries.

The Central California Electric Company derives its power from abrupt drops in the canals of the South Yuba Water Company, located in Placer and Nevada counties. The water company has an immense storage system for municipal supply, irrigation, and water power, and it maintains twenty reservoirs on the divide, or in the upper foothills, thirteen distributing reservoirs in the lower foothills, four hundred miles of canal (three hundred of which will carry one thousand miners' inches), besides many miles of flumes, pipe-lines, and tunnels. The whole forms a vast network over Placer and Nevada counties, stores two billion cubic feet of water, and sustains the flow of six thousand miners' inches for one hundred and fifty days of drought. The electrical power-houses of the Central California Electric Company are at present two in number—at Newcastle, in Placer County, 28 miles distant, and at Auburn, also in Placer County, 33 miles distant. Their aggregate output is nearly two thousand horsepower. A third power-house at Alta, 65 miles from Sacramento, in Placer County, is in course of construction, and the output of the two great generators for this station, now being built by the Westinghouse Electric and Manufacturing Company, will be three thousand horsepower, which will be available in the fall of 1902. The Central California Electric Company supplies thirty firms using power, and illuminates Newcastle, Penryn, Loomis, and Rocklin, in Placer County, and about fifteen hundred light consumers, its incandescents amounting in the aggregate to about fifteen thousand. The building of the new power station at Alta has been the result of ever enlarging demands of custom. The undeveloped resources of the South Yuba Water Company, now at the disposal of the electric company, are immense, and any amount of power desirable can be transmitted by the latter in electric current to Sacramento from distances not over seventy miles.

Aside from the manufactories specified, there are in the county 2 broom factories, 1 berry-box factory, 6 abattoirs, 1 bag factory, several boot and shoe factories, 2 boiler shops, 3 box factories, 3 brick yards, 15 bakeries, 8 bottling works, 1 barley mill, 1 horse-collar factory, 4

carriage factories, 5 candy factories, 2 cracker factories, 3 manufacturing chemist establishments, 2 coffee and spice mills, a number of cigar factories, 1 cooper shop, 1 excelsior factory, 3 foundries, 2 fertilizing material works, 2 glue factories, 1 gas works, 3 granite and marble works, 12 harness and saddle factories, 1 hop compress, 1 iron-fence works, 4 manufacturing jewelers, 1 marmalade plant, 2 metallic cornice works, 1 malt and meal mill, 2 mattress factories, 5 meat-packing establishments, 1 macaroni factory, 7 machine shops, 1 match factory, 3 olive oil plants, 2 pipe works, 7 planing mills, 7 printing offices, 2 pump factories, 4 pickle factories, 2 potteries, 1 plaster works, 2 soap factories, 3 shirt factories, several sausage factories, several tin shops, 2 tile works, 2 trunk factories, 2 tent and awning factories, 1 threshing-machine tooth factory, 1 telephone antiseptic mouthpiece factory, 1 wheel factory.

A natural-gas well supplies nearly half the City of Sacramento, and other wells are being sunk to increase the supply.

### FISH AND GAME.

The natural fish in the rivers are salmon, sturgeon, pike, perch, hard-heads, and dace. Those planted are striped bass, black bass, shad, and three kinds of catfish. The only fish propagated is the salmon, in the headwaters of the Sacramento. The most important fish to be protected is the perch. At present there is no law for its protection, and for a time this variety was nearly exterminated, but of late it has shown up finely. All of the planted fish have multiplied satisfactorily. In the open season large numbers of salmon and other fish are taken and sold in the local and San Francisco markets.

In the line of game, there are geese, ducks, quail, curlew, doves, and larks. All but the geese are protected by State law. The wild geese are migratory, and they arrive from the north from the 15th of September until about the last of October. The varieties are the honker or Canada, the speckled-breasted brant, two of the white brant, the Mexican or black, and the China. The ducks are mostly migratory. Of the non-migratory species are the mallard, spoonbill, and wood duck. The migratory ducks that come from the south are the red-head and the blue-winged teal; and from the north the green-winged teal, wid-geon, sprig, canvasback, gadwell or gray duck, blue bill, and black-jack.

### ROADS AND BRIDGES.

One can drive in any direction, at any time of the year, with no inconvenience, over roads that favorably compare with the streets in many towns elsewhere in the State. All of the bridges and roads are free for travel.

The Sacramento River is spanned at the city by a new bridge, and lower down several ferries are maintained. The American is bridged north of the city on a line with Twelfth Street to connect with Placer County; at Fair Oaks; above at Folsom, to reach the county of Placer; and still farther at Mormon Island, to connect with the county of El Dorado. There are four bridges across the Cosumnes—one at McCracken's, one at Live Oak, one at McConnell's, and the fourth at Michigan Bar. Across the Mokelumne is a bridge at Benson's ferry, connecting



with San Joaquin County, and a ferry connecting Staten and Tyler islands. Recently a new steel drawbridge was erected spanning Georgiana slough, and connecting Andrus Island with the main land at Walnut Grove.

The county authorities have experimented with bituminous oils on the roads, with a view of laying the dust in the summer and of preserving their integrity during the winter months. It has proven to be practicable, economical, and lasting in its effects. The intention is to pursue this method of treatment on all the main traveled roads.

#### DISTRICT NORTH OF THE AMERICAN RIVER.

The lands along the lower reaches of the American River are generally similar in soil qualities to those along the Sacramento. The fringe of bottom land will produce anything in the line of fruits, vines, or vegetables, and in profuse quantities. Hops are extensively grown. About 100,000 sacks of potatoes of superior quality were raised in 1901. Alfalfa cuts four crops a year, producing about seven tons an acre per annum; the balance of the year the lands are pastured to stock. Prunes and table grapes are grown to perfection, and find a ready market. On the red lands, oranges, lemons, peaches, pears, plums, and other varieties of fruit, grapes, both table and wine, and almonds are grown. North of the Haggin grant there are several extensive orchards and vineyards, but most of their fruit and table grapes is shipped from Placer County. The wine grapes are esteemed superior to any other produced in the county. Lands that had been devoted to grain-raising have of late years been planted to fruits and vines. Turkeys and chickens are raised in great numbers, and on some farms poultry-raising is made a specialty. The turkeys average about 14 cents per pound dressed, and the chickens \$4.50 a dozen. Eggs average 18 cents per dozen. There are several dairies of from ten to seventy-five cows each, and the butter and cheese made is a source of profitable income. One cheese factory markets a considerable product. Land is purchasable at from \$15 to \$50 per acre.

#### DISTRICT SOUTH OF THE AMERICAN RIVER.

The land along the American in the vicinity of Brighton and Mayhews, and above, is in some respects unlike that bordering the Sacramento. It rises gradually from the river. That nearest the stream is termed the first bottom, then comes the second bench, and finally the land running into the plains. The bottom lands are a rich alluvial, from ten to sixteen feet deep. This section produces everything in the way of deciduous fruits, grapes, nuts, cereals, and vegetables. It is one of the great areas for grapes in the State, and is particularly noted for the production of Tokays and Cornichons as table varieties. Large quantities of all varieties of wine grapes are also grown.

It was in this section that the late Senator Joseph Routier propagated the first French or petite prunes in California. They grew to perfection, and are superior to the imported, for when marketed they are fresh.

The grapes are grown on the second bench of the bottom land, which

contains more clayey substance than the bottom land proper, on which, as a rule, grapes do not thrive as well.

Fruit and hops are raised on the bottom lands in profuse quantities. All kinds of vegetables are produced, but not for distant marketing. Watermelons and cantaloupes of superior quality are grown on the second bench lands.

Hon. R. D. Stephens and A. B. Humphrey, the largest producers in the district, ship their own produce and largely that of their neighbors. In 1901 they shipped over seventy carloads of table grapes and thirty of tree fruits to the Eastern markets, principally to New York. During the season about another hundred carloads were shipped to the same destination from the balance of the American River districts by the fruit-handling companies.

In the Eastern markets the American River grapes stand at the head of any produced in the State, and readily command a higher average price. It is the Tokay district in California. There are some growers who receive an average of \$2 per crate of twenty pounds for table grapes, being 10 cents a pound gross. That realizes to the producer a return of \$1.25 per crate over freight and commissions. The wine grapes are disposed of to the wineries. The production in 1901 was between seven and eight hundred tons, and they were sold at an average of \$17.50 per ton.

This district is extensively and advantageously irrigated by private plants from wells and from the river. Wells are sunk from 110 to 140 feet in depth, and the water naturally rises to within about 20 feet of the surface in inexhaustible quantities. Mr. Stephens uses for irrigation of his lands a sixty horsepower steam engine, and two electric motors—one of one hundred horsepower and the other of ten. Mr. Humphrey employs for the same purpose two electric motors of fifty and twenty horsepower, respectively. Other land-owners use gasoline engines of five horsepower and upward.

The price at which land can be purchased is from \$100 to \$500 per acre, and, it may be added, there is very little for sale. It must, however, be understood that these prices apply to lands on which orchards and vineyards are in bearing. Other lands, similar in quality, but undeveloped, can be purchased at a very much less figure.

The Sacramento & Placerville Railroad passes handily by, and the market is, it may be said, at the very door.

The development of this section in the last ten years has simply been phenomenal; it has been largely due to the progressiveness and business capabilities of the growers. The brands on their boxes are known and recognized by the buyers in the East as a guarantee of the excellence of the contents.

#### FOLSOM AND VICINITY.

The section around this town was originally devoted to mining, and these operations are yet carried on extensively. Fruit and grapes were planted at an early day, and the gravelly soil of the lower foothills was found splendidly adapted to their culture. The Natoma vineyard is one of the oldest in Northern California and one of the largest in the world. It is owned by the Natoma Vineyard Company, successor of the Natoma Water and Mining Company that was organized in

1851, and it is the largest owner of water rights in the county. Its main canal, constructed in the year named, takes water from the south fork of the American River in El Dorado County. This canal is sixteen miles long. For many years the water was used for mining purposes, but in recent years has been mainly employed to irrigate the lands of the company and adjacent lands. The table grapes—some forty carloads—produced at the Natoma vineyard in 1901 were shipped East, and the wine grapes were sold to the wineries in Napa County. Other smaller vineyards produce large quantities of both table and wine grapes, and the owner of one of them operates his own winery. Bartlett pears, oranges, plums, peaches, prunes, apricots, nectarines, etc., are also extensively produced. In 1901 this section shipped to Eastern markets about two hundred carloads of fruit and grapes. A \$4,000 fruit packing-house, recently built, did a profitable business the past season. In the Folsom section about 2,000 acres, aside from the Natoma vineyard, are in fruit and vines, and a large portion of the land is irrigated by the North Fork ditch. Land suited for fruit and grapes is sold at about \$50 an acre. The first orange tree at Folsom was planted in 1864.

In the past year mining has again come into prominence. Two immense dredgers are operating in the banks of the American River, one at Sailor's Bar and the other at Mississippi Bar, and two others are in process of construction. A bank claim, developed in the last few months, has proven remarkably rich, and when the mines in prospect are opened up on land now bonded, about three hundred men will be employed in their development and operation.

#### ORANGEVALE.

With a view of demonstrating the possibilities of successful colonization, as well as the adaptability of the soil of Sacramento County to the production of all varieties of tree fruits and vines, a number of prominent business men of Sacramento in 1887 formed a corporation styled the Orangevale Colonization Company. It contemplated, on the part of the projectors, a patriotic endeavor to invite and call the attention of homeseekers to the advantages of settling in this section, rather than financial gain by the sale of lands. Three thousand acres of land were purchased, lying northeast of the City of Sacramento, and about two miles west from the town of Folsom.

The property acquired was cleared of its umbrageous oak trees, surveyed and divided into blocks of eighty acres, which were subdivided into tracts of ten acres each, all sales being thus based on multiples of ten acres. Broad avenues or roadways of a uniform width of sixty feet were provided, and traversed the property running north and south, east and west, bordered with palm, cypress, walnut, and olive trees for ornament and shade.

An irrigation system was inaugurated, the exhaustless water-supply for which was drawn from the American River, being carried and distributed throughout the colony in large iron pipes (laid in the streets and avenues) under a gravity pressure of about seventy pounds—the primitive and unsanitary method of distributing water for irrigation in open ditches being thus overcome and avoided.

Three hundred thousand dollars was expended in this enterprise,

in acquiring the property, subdividing, planting, and providing an unparalleled system of irrigation under pressure sufficient to throw a stream from an ordinary hydrant and hose over the roof of any two-story building in the colony and to admit of irrigating a tract in the most perfect manner from standpipes.

A number of tracts were planted, in advance of sale, to citrus as well as deciduous fruits and vines, and it is doubtful if in any other section can be seen such a variety of fruits growing side by side in the same soil, including oranges, lemons, grape-fruit, apricots, apples, cherries, peaches, pears, plums, almonds, chestnuts, walnuts, and olives. Also several varieties of wine and table grapes, including the famous Flame Tokay, the results from which, during the season of 1901, in prices realized, led those sold from any other section of the State. There are fully fifty thousand orange trees planted.

Orangevale, as the pioneer colony of Northern and Central California, is a bright and shining example of what may be accomplished in this direction, and is peopled by an intelligent and thrifty class of citizens, who, it may be safe to say, would not have located in and become taxpayers of this county but for the foresight of the founders of this colony.

Orangevale now boasts of two public school buildings, a handsome church edifice, a postoffice, and an independent election precinct. It has a population of about three hundred, and is an important factor in the shipment of green fruits, having marketed about forty carloads of these during the past season, about one fourth of which were of the citrus varieties. Its output of marketable fruits will rapidly increase as its planted tracts come into bearing.

Admirably and beautifully situated as it is, in the first range of foothills, on the high bluffs overlooking the American River, affording it superior advantages in the matter of drainage, proximity to rail communication for the transportation of its products, and contiguity to the city as a marketing place, Orangevale is destined to become one of the most successful colonies of the State.

#### FAIR OAKS.

This beautiful suburb of Sacramento is situated on the bluffs of the American River, about 16 miles from the capitol, and is reached directly by the Sacramento & Placerville Railroad. There are few places in Northern California which combine, to such an extent, productive soil and picturesque scenery. It is the ideal home of the orange and the olive, and its many oak-clad knolls and commanding bluffs furnish some of the most attractive home-sites in the State. The town is about six years old, and the population, consisting largely of Eastern people, numbers at present about six hundred.

Over twelve hundred acres are planted to oranges, olives, and deciduous fruits. There are about seven hundred acres of oranges. Some of the trees, being now five years old, have borne quite heavily for the past two years. Olives have proved a great success in Fair Oaks, nearly a hundred tons having been gathered from the young orchards this year, from which a very high grade of oil has been extracted. The fruit association in Fair Oaks has erected a fine packing-house and oil-press, and the indications are that the coming year will witness large shipments of fruit from the place.

During the past year a fine steel bridge, costing over \$20,000, has been built across the American River, connecting the Fair Oaks station with the town center; a fine business block, containing four stores and a commodious hall, has been erected on San Juan plaza; and along the bluffs and in other parts of the town a large number of new residences have been built, costing all the way from \$2,000 to \$12,000.

One of the interesting features of Fair Oaks is the so-called Chicago Fair Oaks Association, comprising some fifteen or twenty of the leading business men of Chicago, who have orange tracts in Fair Oaks; and many of whom have already built fine homes and are living in the place. These gentlemen have done much for the welfare of the town, and undoubtedly, when they all are settled there, and others have come to join them, Fair Oaks will be entitled to be called what so many now call it, the "Pasadena of Northern California," a place of beautiful homes.

Fair Oaks is already taking its place among the famous citrus-growing districts of Sacramento County. The soil is rich and abundantly watered by an extensive pipe-system connected with the North Fork ditch, which draws its unfailing supply from the American River. It has no freezes, droughts, or troublesome fruit pests. Like Auburn, Newcastle, and Orangevale, it is situated in the warm belt of the foothills, and in the district of the famous Flame Tokay grape.

The educational privileges of Fair Oaks can hardly be matched in any town of the same size in the State. The "Four Gables" is an academy of a high order, including preparatory work for college, and a very successful business department, and the town has just issued bonds for the erection of a \$7,000 public school building on one of the beautiful knolls of the townsite. There is at present one flourishing church, comprising several denominations, but conducted under Methodist leadership.

Fair Oaks is somewhat of an anomaly among California towns, inasmuch as no land-owner in the place can use his property or allow it to be used for the manufacture or sale of intoxicating drinks. It is the aim of the citizens to build up a stable moral community, such as can hardly fail to attract to its borders many of the best people of the East, who have boys and girls to rear and educate.

We have already referred to the picturesque features of Fair Oaks. In this respect it stands almost alone in Sacramento County, or at least that part of it within easy reach of the capital. The county as a whole is more noted for its productiveness than for its picturesqueness, and comparatively little attention has been paid to the development of these æsthetic features which attract so many people of means to Southern California. Now it happens that Sacramento has within sight of the electric corona on the capitol a tract of some six or seven thousand acres which commands some of the finest scenery on the Pacific Slope, and which offers splendid opportunities for landscape gardening and the building of beautiful homes. As an attractive suburb, Fair Oaks is an invaluable adjunct to Sacramento; and her own citizens, as well as Eastern homeseekers, are beginning to appreciate it as such.

## ALONG THE SACRAMENTO RIVER.

From Sacramento City to and beyond Isleton the frontage of the Sacramento River is an almost continuous line of orchards. The road is on the top of the levee, and the views are magnificent, over a stretch of country of amazing fertility. The land-owners are wealthy, and their residences are among the most luxurious in the county—the majority of them with furnishings costing from \$5,000 to \$50,000 each.

The fruit is shipped from the levee in front of the orchards, each land-owner having his shed at the water's edge, where the fruit is packed and loaded on the steamboats. In addition to the easy access to market, there is the advantage that the fruits ripen earlier than in most of the other districts in the State, and hence command high prices. Steamboat-loads of fruit (peaches, plums, Tragedy prunes, cherries, Bartlett pears, apricots, nectarines, oranges, lemons, etc.); besides beans, potatoes, and vegetables of all kinds, are carried down the river to the San Francisco market. Blackberries and strawberries are extensively cultivated.

There are several extensive dairies and stock farms along the river, which ship large quantities of butter and cheese to Sacramento and San Francisco.

Many fields of alfalfa yield five crops of hay a year at an average of six tons per acre, and six months of the year the land is used for pasturage.

Barley is extensively raised on the tule lands, where the yield is from eighty to one hundred bushels to the acre in places, but thirty sacks is the average. The barley is sown in February, and after it has been harvested the land is planted to late potatoes and beans.

The islands produce the same character of fruits, which are marketed in like manner. On the interior lands, beans and potatoes are produced in fabulous quantities. Crops are grown at all times of the year. When one is harvested, another of a different character is planted.

## FLORIN DISTRICT.

The town of Florin is on the line of the Western Pacific Railroad, 9½ miles south of Sacramento City, and the surrounding district is the most productive strawberry belt in the State. Its product has a reputation for excellence all over the Eastern States.

The land in this section is principally a red soil, with a bedrock foundation, the soil ranging from two to three feet in depth. The depth to water averages about twelve feet, and the flow is abundant, though at places, to obtain a stronger current, the boring is made fifty or sixty feet to a stratum of quicksand, from which the water rises to about ten feet of the surface. The water is lifted mostly by windmills, though many use steam engines with oil fuel. A windmill will irrigate six acres of vineyard, but strawberries require more water. The iron mills have from 8 to 12 foot wheels, and operate a six or eight-inch pump. The cost of a mill and pump is about \$120.

The principal products are strawberries and Tokay grapes. The berries are marketed in California, Oregon, Washington, British Columbia, Montana, Utah, Colorado, and Nevada.

The growers have organized a local company—the Florin Fruit

Growers' Association—and through it handle their own fruits. It is composed of some one hundred and twenty growers.

There are now planted about six hundred acres in strawberries, with about four hundred in full bearing. In the season of 1901 there were shipped 80,000 cases of fifteen pounds each that realized an average of \$1 a case after paying freight and commissions. The profit is about 60 cents a case after paying for picking and casing.

Most of the Tokay grapes are shipped to Eastern markets through the local association. From three to four hundred acres are planted in grapes. In 1901 ninety carloads were sent out that brought from \$800 to \$1,000 each, after paying freight, commissions, and refrigerating charges.

The holdings are in small tracts—from ten to forty acres each. Land is held at from \$30 to \$75 an acre.

#### ELK GROVE DISTRICT.

Elk Grove is 15 miles south of Sacramento, on the line of the Western Pacific Railroad. It lies 5 miles east of the Sacramento River and 3 miles west of the Cosumnes. The surrounding district, including the town, has a population of about one thousand.

There are three distinct characters of soil: the red land, with the hardpan at a depth of from fourteen inches to three feet; the sediment deposit along the Cosumnes; and the adobe to the west and southwest of the town.

The principal products are grain, fruit, and poultry. Wheat, barley, and oats are quite extensively raised. A great variety, both of deciduous and citrus fruits, is grown, although no very extensive orchards have yet been planted. All varieties of grapes do well, but the Tokay is produced to perfection. One vineyard of seven acres netted \$1,200 in 1901.

The dairy business is not important for its magnitude at present, but it is important as indicating a change from the old dependence on grain-raising. Some time last summer E. E. Trueblood installed a hand-power separator, and began separating on a small scale, sending the cream to the Stockton creamery. Later he secured a larger machine and ran it by steam. A few months since the business passed into the hands of Mr. Owens, who has found it necessary to get a still larger machine and make other improvements which convenience and an increased amount of work demand. From a few hundred pounds at first, the station is now skimming between thirty and forty cents of milk daily. The disbursements among the patrons for February were more than \$460. The creamery men inform us that the milk from this station is the highest testing milk they receive. Probably this is due to the fact that many Jersey and high-grade cows are used here. One herd of thoroughbreds has more than once reached a composite test of 6 per cent butter-fat by the Babcock. There is every indication that this business will grow. Some small herds have returned \$9 a month per cow, besides the skim milk.

A short distance east of Elk Grove there is a prosperous creamery that was in operation before the skimming station was installed in the town. M. Colton is the proprietor, and the product of this creamery is popularly known in Sacramento.

The poultry business has greatly increased in the last few years. As high as eighty cases (thirty dozen each) of eggs have been shipped in a day. About \$1 per hen is the net average income for the season. The chickens are healthy, and require but little care. No great outlay is necessary. Turkeys, geese, and ducks also form a considerable industry, and bring good returns.

There is an unlimited supply of water for irrigation, at a depth of from twenty-five to fifty feet, and it is raised by windmills and engines.

Land is held at from \$15 to \$50 an acre. With a capital of \$2,000, twenty acres of land can be purchased, buildings erected, and improvements made, where an industrious man can make a comfortable living and provide a pleasant home.

#### GALT DISTRICT.

The location and surroundings of Galt are ideal, and the district affords available homes for two thousand new families. It is widely known, because of the richness and variety of soils in a section embracing some 100,000 acres of land lying between two magnificent watercourses: the Cosumnes River on the north, and Dry Creek on the south.

As a wheat-producing district, the Galt section is unsurpassed by any other equal area in the Sacramento Valley. Wheat-growing has been one of the great sources of the wealth of the district, and twenty years ago prices were high, cultivation easy, the yield enormous, and fortunes quickly accumulated. Wheat at once became the staple product, and the people paid little attention to the development of other industries. Changed conditions have reduced the margin of profit in the wheat industry to an uncertain and unreliable quantity. The rich lands in the district can be used more profitably in diversified farming, but as radical changes are made slowly, wheat is liable to remain the leading product for many years to come. Grain-growers have been much wedded to that industry, and as a result in recent years they have suffered for it. But in these days of progress there is a growing tendency toward a greater diversification of farming. Many of the largest wheat-growers are going into the livestock business, and several fine herds of thoroughbred cattle are now owned in the district. Dairying is being given an impetus, and several creameries are thriving.

While the fruit industry has been in a measure neglected, still many fine orchards of deciduous fruits are scattered throughout the district. Some of the choicest oranges grown in Northern California are raised in this section, and they mature four weeks earlier than in the citrus belt of Southern California. A superior lemon is also produced. The rich bottom lands are particularly adapted to the olive. In fact, all varieties of fruit can be profitably produced. The fruit industry may be said to be in its infancy and has not received the attention its importance deserves.

During the past year the grape industry has been a fruitful source of revenue. The prices for all varieties have been good. There has been an extraordinary demand for wine grapes, and the prices ranged from \$18 to \$22.50 per ton. In an ordinary season the yield of wine grapes



is from six to eight tons to the acre, and in a good season it often runs up to as high as ten tons. Table grapes, principally Tokays, for Eastern shipment, are successfully grown, and the producers receive as high as \$40 per ton. The outlook for the grape industry is most promising, and while the acreage was increased several hundred in 1901, it now looks as if the plantings will be doubled this season.

The large landholders are subdividing their tracts into small farms, and are offering them for sale to intending settlers on advantageous terms. Many families from the Eastern States and the Northwest have located in the neighborhood within the past six months, and not a few are arriving daily. They are buying homes and will engage in grape-growing.

The inducements that are being offered to settlers are unparalleled. A proposition that meets with popular favor is being made by some of the large landholders, viz: that people of modest means who will plant, cultivate, and care for twenty, forty, sixty, or eighty acres of grapes until the vines are matured, will be given a deed, without further cost, to one half the acreage of land thus planted. In other words, the party is given the opportunity to acquire the land without having to pay a cent in cash for it. Of course, such opportunities will necessarily be limited, and no doubt in a brief time all such offers will be taken up. The soil has been demonstrated to be specially adapted to the grape, and the market is readily at hand.

The land in the district is level, and the soil, generally speaking, a heavy red clay of an average depth of from two and a half to eight feet. An inexhaustible subterranean current of water underlies the district at a depth of from fifteen to twenty-five feet. Irrigation is not required for the successful cultivation of fruit trees or vines; in fact, grapes of all varieties do better in the district without irrigation. To raise strawberries irrigation is necessary, but an abundance of water is to be had by pumping from a depth of less than twenty-five feet.

The eastern portion of the district is comprised of rolling lands, with a deep gravelly soil, red in color, and particularly adapted to wine-grape culture. The western portion affords some of the best pasture land in the valley—a deep loamy soil, very fertile, and capable of producing anything that grows under the sun. On the southern slopes can be seen some of the finest alfalfa fields in the county. Large quantities of beans, potatoes, corn, and garden truck are profitably raised on the bottom lands.

Land in large or small quantities can be bought at from \$40 to \$60 an acre, according to quality and location.

The amount of grain shipped from Galt and other points in the district in 1901 was about 300,000 sacks, valued at \$375,000.

The shipments of table grapes to the East were ten carloads. It is impossible to give an estimate of the quantity of grapes that were sold to the local wineries, but it was large.

Hogs are extensively and profitably raised, and sheep production is an important industry. It is one of the most extensive poultry-raising districts in the county. On some of the chicken ranches as many as 5,000 are raised in a season, and the business is profitable.

The Galt Vineyard and Wine Company has already planted 285 acres of wine grapes on a single tract, and intend to continue planting from year to year until the vineyard shall consist of 1,000 acres.

Whitaker & Ray, large landholders in the district, have induced, in

the past few months, twenty families to establish homes, and the newcomers are planting 600 acres of grapes. These families simply form the nucleus for a large community of people who will be attracted to the district because of the advantageous opportunities that are presented to homeseekers.

#### FRANKLIN DISTRICT.

Franklin is fifteen miles southeast of Sacramento City and four miles east of the Sacramento River. The soil is the ordinary plains upland, partly adobe. Wheat, oats, and barley are the principal products. In 1901 between 100,000 and 120,000 sacks of wheat were grown, and from 50,000 to 75,000 sacks of barley and oats. The grain is shipped to Port Costa from Gammon's Landing on the river, where there is a warehouse capable of storing 20,000 tons of grain. Most of the product is handled by Frank Kunsting, the principal merchant of Franklin.

There are in the district two large creameries and two skimming stations, as well as several minor skimmeries. The cream is disposed of at the two creameries spoken of. There are several dairies of from twenty to one hundred cows each, and many smaller.

Cattle-raising is a prominent industry, and about 1,000 beeves were marketed last year. At Franklin there are three cattle-dealers who furnish dressed beef to the Sacramento City market, as well as mutton and other meats. Many of the farms maintain from fifty to one hundred head of sheep.

Wine grapes are raised to some extent, and the acreage is increasing. Land can be purchased at from \$20 to \$30 per acre.

#### COSUMNES RIVER DISTRICT.

The Cosumnes River bottom is about one mile wide and twenty miles long. Then, on each side, come the uplands. The uplands are of a red gravelly soil, and with ordinary management produce about fourteen bushels of oats, twelve of barley, or ten of wheat per acre, while three fourths of a ton of oat hay per acre is a fair average. It grows all kinds of small fruits, such as blackberries, strawberries, raspberries, etc., besides all kinds and varieties of table and wine grapes. This land is held at from \$7 to \$20 an acre, according to the character of the improvements. Potatoes of the best quality are also produced, and much land is devoted to sheep-raising and dairying. The bottom land is a rich, dark, sandy loam, suitable for the production of almost anything that will grow in the State. Wheat, oats, and barley average about forty bushels to the acre, and Indian corn about the same. A large area is planted to fruit, and its adaptability for that purpose is unexcelled. Apricots, pears, peaches, plums, apples, quinces, pomegranates, nectarines, and all kinds of grapes do excellently. The French prune is more extensively planted than any other one variety. Oranges and lemons do well, but as yet have not been extensively grown. All kinds of vegetables are produced, while hops are in places made a specialty. The mangel-wurzel and sugar-beet do well. Alfalfa is very generally raised for hay and for fall grazing. Poultry is an important specialty, principally for the eggs. Some blooded swine are produced, and much attention is given to sheep. The dairying interest is attracting much attention, and large quantities of butter and cheese are made, particularly the latter. This bottom land is held at from \$35 to \$75 per acre.

## SAN BENITO COUNTY.

San Benito County lies 25 miles inland and to the east of the town of Monterey; it is bounded on the north by Santa Clara County, on the east by Merced and Fresno, and on the south and west by Monterey County. The county is about 70 miles in length, averages about 21 miles in width, and embraces an area of 1,056 square miles, or 675,840 acres.

It is inclosed on two sides by mountains—on the east by the Mount Diablo range, and on the west by the Gabilan Mountains. From these ranges the surface slopes to the valley of the San Benito River, which flows northwesterly through the middle of the county, and empties into the Pajaro River. A few small streams, the most important of which is Tres Pinos Creek, are tributary to the San Benito. A very large part of the area of San Benito is classed as mountainous, but there are numbers of little valleys and much level land in the county.

### SOILS.

The soil of San Benito may properly be divided into four classes, as follows:

First—About 25,000 acres of rich garden land. The soil is of a black sandy loam, and will produce in abundance any kind of vegetation, and is excellent for fruit. Upon this fertile land are raised the fine vegetables which supply local demands, and largely the markets of San Francisco.

Second—About 34,300 acres of first-class grain land, contained principally in what is known as San Benito Valley (the extreme southern portion of Santa Clara Valley). The soil is a black sandy loam, or adobe, with a blue or sandy subsoil, and holds moisture well. It is principally from this land that the large amount of grain usually shipped from this county is raised.

Third—About 46,000 acres of what is termed second-class grain land, situated in the foothills, and composed about equally of adobe and sandy soil. This land is not so strong as the valley land, but produces quite fairly, and in dry seasons is surer of good crops than the richer bottom land. From this land is cut very fine hay, noted in San Francisco markets as "Hollister hay."

Fourth—In addition to 105,300 acres capable of producing vegetables and grain, there is a large amount of hill land which makes very fine pasture. More or less of it is connected with many of the ranches in the valley.

The largest single body of valley land lies in the northern part of the county, and forms the *southern* end of the Santa Clara Valley. Numerous valleys of smaller extent add their quota to the area of first-class land. Among these may be named the San Juan, Santa Ana, Quien Sabe, Los Muertos, Bear, Panoche, and Bitter Water valleys.

## CLIMATE.

San Benito County, situated midway between the San Joaquin Valley and the coast, has a climate tempered by both, avoiding the extreme heat of the former and the chilling winds of the latter. It is separated from the coast by the Gabilan range, but is yet near enough to the ocean to feel its tempering influence. Fogs are not of frequent occurrence, and during the summer months the ocean breeze finds its way every day through a mountain gap, rendering the climate very healthful and pleasant. The average temperature at Hollister shows 59.5° for the year, the highest being 109° and the lowest 21°. Vegetables grow the year round, and the nights are always cool. The average precipitation is nearly 12 inches annually, which, it may be said, all falls between November and April.

## WATER-SUPPLY.

The rivers and streams that flow from the mountains bordering the county, together with numerous springs, furnish an abundant supply of water. No irrigating canals on a large scale have been constructed, because they have not been found necessary; the generous rains of the winter and spring months, in most seasons, give to the ground all the moisture needed. San Benito's topography is such that if any system were adopted for husbanding the water which runs off in the San Benito River and the Tres Pinos Creek a great portion of the valley lands could be irrigated at a small expense. There is a large area of the county in which artesian water is obtainable. In the San Felipe district alone there are a large number of artesian wells constantly flowing.

## CULTURAL PRODUCTS.

San Benito has been principally devoted to farming and stock-raising, but of late years a great deal of attention has been given to horticulture, and with the most encouraging results. Large areas of land have been planted to fruit in the country around and tributary to Hollister.

One of the oldest orchards in the State is found in San Benito, being the old Mission orchard at San Juan. This was planted as early as 1785, and comprised pears, apples, olives, and grapes. Although it has been neglected and fallen largely into decay, there are still a number of the original trees standing; these are pears and olives, scattered about in promiscuous disorder.

While not strictly a fruit county, prunes, apricots, peaches, pears, apples, grapes, cherries, figs, olives, almonds, and walnuts do well.

The agricultural resources of the county are large and varied. Cereals of all descriptions are raised. Last season the hay crop alone amounted to 40,000 tons.

Vegetables of most descriptions thrive, and farmers are now paying more attention to diversified farming than heretofore. Sugar-beets and beans are grown on a large scale, and many acres of new land are now coming under cultivation.

## DAIRYING AND LIVESTOCK-RAISING.

Dairying is a profitable industry, and is largely on the increase. One of the foremost modern creameries of the State is located at Hollister, the product of which is of the highest order, and in competition at the creamery contests at the State Fair and elsewhere has always been well to the front.

Poultry-raising is also a very valuable and rapidly growing industry. Horses, cattle, and hogs are raised in the county on quite a large scale.

## MINERAL RESOURCES.

The mineral resources of the county are confined mostly to the production of oil and quicksilver. The New Idria Quicksilver Company is one of the largest producers of that mineral in the State.

The population of the county is about 7,000. Hollister is the county seat, and is a growing town, with a population of over 3,000. San Juan, Tres Pinos, and other smaller towns are located in the county.

The latest report of the United States General Land Office gives the acreage of unoccupied land as over 360,000, mostly mountainous and grazing.

## SAN BERNARDINO COUNTY.

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San Bernardino County is not only the largest in the State of California, but it is the largest county in the United States. Its area is 20,160 square miles, or 12,902,400 acres. To the ordinary mind the figures representing the size of this county do not appeal, as they are too large for comprehension; but some idea may be gained when we say that this county is larger than the States of New Hampshire, Vermont, and Rhode Island combined; it is larger than New Jersey, Delaware, Massachusetts, and Rhode Island combined; it is very nearly as large as Massachusetts, Connecticut, and New Jersey combined. There are eight States in the Union each of which in area is less than this county.

This county is situated in the southeastern part of the State, there being but two counties between it and the Mexican line. On the north we have the State of Nevada and the large county of Inyo; on the east we have the Colorado River and the Territory of Arizona; on the south, Riverside County; and the adjoining counties on the west are Orange, Los Angeles, and Kern.

The greater portion of this vast county is what is denominated "desert." In the north is the great Mojave Desert; and in the east, the northern end of the great Colorado Desert; the only arable portions being confined to the southwestern part of the county. This arable portion of the county is called the San Bernardino Valley, sometimes the upper Santa Ana Valley. With the exception of a strip along the northern border of the great San Bernardino range of mountains, this valley, and the outlying valleys on the flanks of the mountains, are the only portions which are under cultivation. The San Bernardino Valley forms an almost perfect amphitheater encircled by mountains and hills, which amphitheater is open only on the west, allowing the sea breeze from the Pacific Ocean to sweep its entire length.

### TOPOGRAPHY.

Viewed from a topographical standpoint, this county may be considered an elevated plateau or plain, traversed in different directions by ranges of mountains, separated by low, broad passes, which give the stranger the impression that it is not a range of mountains, but isolated peaks, or masses of peaks, which have a general northwest and southeast trend. Strictly speaking, there is not what is usually called a foothill region, as the mountains rise from the level of the plain to their topmost peaks in one general elevation.

The lowest part of this plain is about 900 feet above sea-level. From this elevation, the mountain range at the north of the San Bernardino Valley rises to a height of from 4,000 to 6,000 feet, culminating at the eastern end in a twin-peaked mountain, the lower and more conical elevation being called Mount San Bernardino, with an elevation of

11,800 feet, and the taller, Mount San Gorgonio, with an elevation of 12,600 feet. Mount San Gorgonio possesses the unique distinction of being the highest mountain in the world which rises in an unbroken mass from below the sea-level to its topmost pinnacle.

In the north and northeast portions of the county are many isolated peaks, which evidently, at no distant geological period, were active volcanoes, as in many places the lava flow can be traced for miles.

The mountains to the north and east, to the dweller in the valley below, seem as though they were destitute of vegetation. The mountain ranges and peaks, to an elevation of 11,000 feet, are covered with forests of pine, cedar, and juniper, but only on the top and north, the south sides being bare of everything except chaparral, sage, mesquit, and other brush.

Mount San Gorgonio is snow-capped during the entire year, and from this source is derived much of the water that is used for irrigation in the summer season in the valley below, the remainder coming from the mountain range, giving a bountiful supply of water for the use of irrigators. The melting snows of winter, being held back in the heavy growth of chaparral and brush along the mountain sides, sink deep into the soil, thence percolate slowly through permeable strata far below the surface of the earth, furnishing the supply of water from which the hundreds of artesian wells in the valley pour forth their nourishing floods. The combined waters of the streams, springs, and wells make this valley one of the best watered in all Southern California.

The forests on the mountain ranges furnish a considerable portion of the supply of lumber and timber used in the valley, and also a large supply of fuel.

Mount San Bernardino, from its apparently perfect cone, has been taken by the United States surveyors as the initial point for the land survey of all Southern California, both base and meridian starting from its peak.

The northern and eastern parts of the county are, for the most part, absolutely sterile, and no amount of water will ever bring these lands under the plow, as the soil is composed largely of sand, in many places covered with a lava flow; in other places, vast stretches of alkali; while soda, borax, and nitrates are so abundant as to create an inflorescence, whose glitter is visible from every point of view for many miles. Yet, along the northern slope of these mountains there are many stretches of fertile land, and small valleys which can be cultivated with profit wherever water is available. Along the Mojave River where it debouches from the mountains to the desert, and for many miles, the land on both sides is fertile, easily worked, and produces abundantly as long as the water-supply is available.

#### WATER-SUPPLY.

On the south side of the mountains the water-supply, were it properly conserved and economically used, is amply sufficient for the cultivation of all the land which is tillable and can be reached by ditches or pipelines. From every cañon in the range—and there are scores of them—creeks and rivers find their way to the plain below. As is the case with most streams in mountainous countries, the larger part of these creeks are torrential in their character; that is, during the rainy season

and after heavy rains, they flow roaring, raging torrents, but in a few hours, or days, become dry until the next rainfall. Some, however, are perennial streams, and furnish the greater supply of water for the irrigation of the valley, and nourish and fructify the orchards, the products of which have made this valley famous over the United States. Chief among these perennial streams are the Santa Ana River, Mill Creek, Warm Creek, City Creek, Twin Creek, Lytle Creek, and San Antonio Creek. The only perennial stream on the north side of the mountains in the county is the Mojave River.

### SOIL.

The soil of the San Bernardino Valley varies greatly with every locality. In the eastern part of the valley, at Redlands and Highland, it is a sharp gravel or sand, with a large mixture of alluvial deposits brought down from the mountains by the wash and torrents of countless ages. This soil is very easily worked, and with a sufficiency of water is extremely fertile. In some places clay deposits are found, but these also can be worked when proper care is exercised, as they are not of a cement-like character. The soil is heavily impregnated with iron, and is rich in potash and other necessary constituents of luxuriant plant life.

West of Redlands, at Old San Bernardino, the soil changes to a heavy, dark loam, with occasional patches of adobe. Still farther west, between Old San Bernardino and the river, the soil is of a lighter character, and possesses much more of the soda and potash constituents.

North of San Bernardino and about Rialto and Cucamonga, the soil is a light, sandy and gravelly loam. Immediately about the City of San Bernardino the soil is a strong adobe, with appearances here and there of soda salts.

About Colton and Ontario, and especially on Colton Terrace, the soil is a sharp, gravelly loam, similar to the Redlands and Highland section.

Along the river bottoms the soil is a heavy clay, and in some places a black adobe. It is cold and damp and not as suitable for fruit culture as for grazing and the growing of hay crops.

### CLIMATE.

Within the borders of San Bernardino County nearly every grade, character, and variety of climate may be found. It all depends upon the elevation and the local surroundings. In the mountain valleys and upper plateaus, winter possesses almost all the features which may be found in any of the Northern or Eastern States. Snow falls, in places to a depth of from ten to twenty feet in favorable seasons, and King Frost holds sway for months at a time. Coming to a lower elevation, we find abundant rains, occasional snows, sharp frosts, and the general characteristics of a winter of the central portion of the United States. Still lower in the valleys we find frosts infrequent, snow a rarity, so much so that many children have never seen the snow fall in their lives, together with a summer temperature hovering about the 100° mark. Yet, even in the lower valleys, with this high temperature, at an elevation of from 1,000 to 2,000 feet, the constant currents of air from the snow-capped mountain peaks so modify the temperature that the nights are always



pleasant, and sometimes, even in summer, too chilly for outdoor pleasures without heavy wraps.

The average annual rainfall in the lower valleys is from thirteen to fifteen inches. Except the daytime heats of summer, there are absolutely no disagreeable features to the climate, with the exception, in the winter season, of what are denominated "northers." These are north winds, with a velocity of from ten to twenty miles an hour, usually warm, extremely dry, and carrying with them a large amount of ozone. Thus, this most disagreeable feature of the winter brings with it a purifying effect on the atmosphere which is highly conducive to health. These northers are never destructive in their character, neither is it necessary to plant windbreaks on the north to protect orchards, as was the common practice a couple of decades ago. These winds are disagreeable, as every one who has experienced them will testify, but they are neither destructive nor inimical to health.

In the spring months there are occasional night and early morning fogs. These drift in from the ocean and are heaviest on low ground, thinning out until at an elevation of 1,500 or 2,000 feet they are very rare; but even on low ground they seldom last longer than until seven or eight o'clock in the morning. Many horticulturists consider these ocean fogs as of great benefit to their orchards and fields. No disagreeable land fogs are ever experienced here.

The summers may, without any degree of exaggeration, be called hot. The range of the thermometer during the day, from ten o'clock to three, will run from 90° to 105° in the San Bernardino Valley. Across the mountains, on the desert, one can have any degree of heat desired, up to 130°. The degree of sensible heat is not nearly so high as the figures on the thermometer would seem to indicate. This arises from the fact that the atmosphere is extremely dry, the hygrometer showing as low, occasionally, as eight degrees of moisture; the average humidity is not more than one third that of the Eastern States. From this low humidity, the discomforts and inconveniences incident in the East to a similar temperature are utterly unknown here. Even during the hottest days it is cool in the shade where a free circulation of air can be maintained, as under a tree out doors. Sunstrokes, heat sickness, hydrophobia, and other concomitants of an Eastern 100° temperature are here entirely unknown.

Nights in summer are always cool and pleasant, this being due to the descending currents of air from the snow-capped mountains, which form what is called by seamen the land breeze. The high temperature is also modified in summer by the sea breeze from the Pacific Ocean. This usually commences at nine or ten o'clock in the morning, and continues until within an hour of sunset.

#### RAINFALL.

The rainfall of the county varies a great deal, as does the climate. As one comes from the lower levels to the high altitudes the rainfall increases. The general rainfall in the lower portions of the valley will average about 13 inches. On the mountain slopes it will run from 15 to 20 inches. On the mountain ranges and peaks it will run from 40 to even as high as 60 inches. This rainfall is for the valley and south slope of the mountains, and falls between October and May. Showers

between May and October are extremely rare. The heaviest rainfall in later years is in February and March.

On the north and east of the mountain ranges, on the great Mojave and Colorado deserts, the larger portion of the rainfall comes in July and August, they having no rains during the winter months. There is no data by which the amount of this rainfall may be given. The rains are very short, sharp, and heavy, frequently accompanied by thunder and lightning, which latter is almost an unknown quantity south of the mountains.

### IRRIGATION WORKS.

In the number and character of her irrigation enterprises, San Bernardino County stands in the very front rank. This county has been called, with truth, the "Mother of Irrigation," because here was dug the first irrigation ditch within the limits of the State, and here were the first crops raised by means of irrigation. It is nearly a hundred years since the Mission fathers of San Gabriel established an outlying post, or sub-mission, just west of Redlands, and employed Indian labor to dig what is commonly known as the *zanja*. This ancient ditch is still in use and within the same banks that were first thrown up by Indian labor almost a century ago.

In 1851, when the party which had been sent to California by Brigham Young, the head of the Mormon church, to search out a site for an outfitting station for the great wagon trains which were to haul supplies from the Pacific Ocean to Salt Lake City, they selected what is now the city of San Bernardino as the location for the future settlement. No sooner had they arrived here with their families and household goods than they set about constructing the first irrigation system in the valley. Taking the waters of several mountain streams from their beds, under a crude and wasteful system, they yet demonstrated that the use of water for irrigation purposes not only produced bountiful crops, but that irrigation was an absolute insurance against the disasters of dry seasons.

From this beginning, fifty years ago, the network of irrigation canals and pipe-lines and flumes and ditches has spread over the larger portion of the arable part of the valley, even, in some cases, extending well up the mountain slopes. As a result, there are to-day hundreds of miles of canals and pipe-lines, with thousands of miles of laterals and individual pipe-lines. In addition to this, hundreds and hundreds of wells have been bored in the valley, each producing a flowing stream of water without other or further expense, which volume is sufficient not only to irrigate many thousand of acres in this valley, but also furnishes the magnificent supply of water which fructifies and renders fertile the great plain on which the city of Riverside stands.

The largest of these irrigation systems is that of the Bear Valley Irrigation Company. This system commences with an artificial lake high up in the mountains, where the waters are held back by a solid masonry dam which has been thrown across Bear Creek cañon. In this artificial lake, when full, is stored 10,000,000,000 gallons, or 26,465 acre-feet, of water. The water from this lake travels for miles in a natural gorge made by Bear Creek and the Santa Ana River. From this, at the mouth of the Santa Ana River, it is diverted into cement ditches and pipe-lines, and through them distributed for use.

Another gigantic irrigation system is that which was projected by the Arrowhead Reservoir Company eight years ago, and upon which work has been steadily progressing. This company is now confident that within two years it will be able to furnish an abundant supply of water for many thousand acres of land in the western part of the valley.

This water-supply, coming from the high Sierras, and derived from melting snows, is exceptional in its purity and freedom from any deleterious substances. Almost all the towns in the valley are supplied with this pure water by means of subsidiary reservoirs and pipe-lines and artesian wells, which secure the absolute purity of their domestic water-supply, which purity and abundance are the admiration and envy of less fortunate towns.

In the last four years there have been three years of serious drought. The mountain supply from the reservoirs was exhausted; the streams ran low, or became streaks of sand and bowlders, and a water famine seemed imminent. But the energy and enterprise of the people averted all danger, and what seemed at first to threaten a serious calamity has proven, although costly, a blessing in disguise, for it has developed a new source of water which will prove an insurance against any number of dry years. Wells have been bored in every section of the valley, in many of which an artesian flow was developed; and where flowing water was not found, pumping plants have been installed, which have added thousands of inches of irrigation water to the available supply, not only in this but in the adjoining county of Riverside. There is now no fear of any serious damage to horticulture or agriculture by reason of a failure of rain, for this underground water-supply seems to be inexhaustible, leading one to believe that its primary source lies far beyond the region of the mountain ranges of this county. Many hundreds of thousands of dollars have been expended in this subterranean exploration for water during the past four years, and the result amply justifies the expenditure.

#### FRUITS.

Almost every variety of fruit known to man is or can be produced in some part of this county. The only exceptions are those which are strictly tropical in character. In the mountain valleys and upon the upper plateaus, apples and cherries are grown in as great perfection as can be found anywhere, and their cultivation, in their proper localities, has proven very remunerative.

On the lower levels, all of the deciduous fruits are produced, the principal varieties grown being peaches, apricots, prunes, and grapes. The production of citrus fruits—oranges, lemons, and pomeloes—is very large, these fruits being grown to a perfection seldom reached elsewhere. It is more than forty years since the first orange trees were planted in this valley, although the production of citrus fruits on a commercial scale dates back only about twenty years. The production of oranges has increased rapidly during the last six years, the shipments from the county for the calendar year 1901 reaching 177,335,535 pounds.

The first planting of orange trees in the county were two trees set out by Hon. Anson Van Leuven in his dooryard in Old San Bernardino in the early sixties, and by M. H. Crafts at what is now called Crafton, at about the same time or a year or two later. The planting of orange

trees for the purpose of raising fruit on a commercial basis dates back practically less than twenty years.

The chief fruit-growing sections of San Bernardino County are, in the order of their importance, Redlands, Ontario, Highland, Colton, and Rialto. The leading fruits of the county are those of the citrus family, the oranges from this county having taken the highest rank wherever introduced in the United States. Almost one third of the oranges shipped from the State of California are produced in this county.

Some of the finest apple orchards in the State are just coming into bearing.

In the western part of the county, in the Rialto, Etiwanda, and Cucamonga neighborhoods, there is produced a large quantity of raisins, which rank equal in quality and appearance with the best produced anywhere. The shipments during the year 1901 amounted to 1,345,325 pounds. Another section of the county especially adapted to the culture of grapes is that about Hesperia, which lies along the Mojave River.

The number of fruit trees in the county, as returned by the Assessor for the year 1901, is given as follows:

	Bearing.	Non-Bearing.
Apple .....	10,000	3,500
Apricot .....	60,000	3,000
Cherry .....	8,000	3,000
Fig .....	3,000	1,500
Olive .....	20,000	15,000
Peach .....	75,000	4,000
Pear .....	5,000	1,000
Prune .....	20,000	10,000
Lemon .....	120,000	40,000
Orange .....	750,000	600,000
Almond .....	2,000	1,500
Walnut .....	3,000	1,000

Add to this in grapevines, 7,000 acres of raisin grapes in bearing and 2,000 acres non-bearing, and 2,500 acres of bearing wine grapes and 3,000 acres non-bearing.

#### SUGAR.

In the southwest corner of the valley is located the Chino Ranch, on which is the third largest beet-sugar factory in the world. The acreage devoted to sugar-beet culture is in the neighborhood of 20,000. The factory has a capacity for the production of about 12,000 tons of refined sugar annually. The lands of the Chino Ranch seem peculiarly adapted to the raising of sugar-beets, producing roots of an exceptional sugar content and of a very high degree of purity. The culture of sugar-beets has been a profitable industry for the farmers engaged therein. On this ranch are fattened thousands of head of cattle upon the beet pulp, which is siloed for that purpose.

#### MARMALADE.

A marmalade factory has been started in Redlands, which has a capacity of 300 gallons per day.

#### HONEY.

Along the slope of the mountains, in the mountain valleys and cañons are numerous bee ranches, or apiaries, from which are produced a large amount of honey, which commands a high price in the Eastern markets. This county ranks second in the State in the production of honey.

## EXPORTS.

The following table will show, for the year 1901, the shipments of the products of the soil:

	Pounds.
Oranges and lemons .....	177,335,535
Vegetables .....	21,954,540
Dried fruits .....	3,815,411
Canned fruits .....	2,544,825
Raisins .....	1,345,325
Green fruits (deciduous) .....	709,375
Wines and brandies .....	414,800
Nuts .....	20,600

## LIVESTOCK, DAIRYING, AND AGRICULTURE.

The raising of cattle and sheep is carried on along the mountain ranges and in the upper mountain valleys, and on the Chino Ranch several thousand head of beef cattle are fattened annually. Several large bands of sheep are grazed on the ranges, and the annual wool clip is about 300,000 pounds.

Dairying is carried on in both the upper and lower valleys, the principal dairies and creameries being in the Cajon Pass, Yucaipe, Victoria, Chino, and a section about the city of San Bernardino. The production of butter from the principal dairies and creameries for the year 1901 was 184,728 pounds, and a much larger one for the future is assured. Pure-bred or grades of high-class dairy cattle are in general use throughout the county.

A stock company has been formed for the breeding of the most desirable classes of horses, and has purchased a large ranch at Victor for a farm to be devoted exclusively to the raising of horses.

Wheat, oats, and barley are grown in considerable quantities, and alfalfa is grown with profit.

Vegetables of nearly all descriptions are raised, the yield being very large, and a growing shipping trade to outside markets has been established.

## MINES AND MINING.

The northern and eastern portions of the county are very heavily mineralized, and although prospecting has been carried on for the last fifty years, new and greater finds are being made every year. Almost every known mineral has been discovered in some portion of the county. Gold, silver, copper, iron, tin, lead, borax, soda, and nitrates are found in abundance and scattered over a wide area of country. Some of the richest silver mines in the State are to be found in this county. Copper exists in great abundance, and recent developments have shown some of the copper properties to be of extraordinary richness. The high cost of freight to and from the mines, the scarcity of water, which renders the life of the prospector precarious as well as interfering with the working of the mines, the scarcity and high cost of fuel—these things all combined have limited prospecting and greatly retarded mining development. The building of railroads across the desert has partially removed some of these obstacles, and mining has been prosecuted with more vigor during the past year than for almost any year in the last twenty. New mines are being opened, new mills are being built, new

finds are being made, and the outlook for the mining industry is very bright indeed.

The mineral production of this county for the year 1901 is valued at \$1,844,239. From the report of the State Mineralogist for the year 1901 we take the following figures:

Gold .....	\$399,693
Silver .....	\$57,164
Copper .....	50,000 lbs.
Lead .....	500 lbs.
Borax .....	18,796 tons.
Turquoise .....	\$20,000
Cement .....	71,800 bbls.
Granite .....	3,840 cu. ft.
Lime .....	38,783 bbls.
Limestone .....	54,210 tons.
Macadam .....	5,500 tons.
Rubble .....	297,695 tons.
Paving-blocks .....	180,000

At Declezville, a few miles west of Colton, immense quarries are being operated, supplying rock for the Government breakwater at San Pedro Harbor.

Although these figures in regard to mining do not directly pertain to agriculture or horticulture, yet they are of value, because of the fact that the entire mining region must draw its supplies of vegetables and fruits from the nearby valleys. As there are thousands of men engaged in mining in the county, so there are thousands of consumers for the products of the farmer and fruit-grower in the arable portion of the county.





MAIN EXHIBITION ROOM—SAN DIEGO CHAMBER OF COMMERCE.



## SAN DIEGO COUNTY.

By H. P. WOOD,

Secretary Chamber of Commerce, San Diego, California.

San Diego County occupies the southern part of the State of California, and has an area of nearly 8,500 square miles, being slightly larger than Massachusetts. On the north the county is bounded by Orange and Riverside counties; on the east by the Colorado River, which here divides Arizona from California; on the south by the republic of Mexico; while on the west, the Pacific Ocean washes its shores for upward of 75 miles. The land rises gently from the ocean for a distance of about 50 miles to a chain of peaks forming the backbone of the county, descending again quite rapidly to the Colorado River valley, the greater part of which is below sea-level.

### ARABLE LAND.

The arable portion of the western slope of the county is divided into a series of irregular terraces or plateaus.

The lower or coast terrace comprises the Tia Juana, Otay, Sweetwater, Mission, Soledad, San Dieguito, Agua Hedionda, San Luis Rey, and Santa Margarita or Los Flores valleys, with the intervening mesas. This large acreage is practically frostless. Next comes the Jamul, Jamacha, Dehesa, El Cajon, Poway, Bernardo, San Pasqual, Escondido, San Marcos, and Vista valleys, varying in elevation from 400 to 500 feet.

The third terrace, whose altitude ranges from 1,000 to 2,500 feet, comprises the foothill region, consisting of Dulzura, Lyons, Lawson, Alpine, Viejas, Barona, San Vicente, Santa Maria, Ballena, Bear, Moosa, Monserrate, and Fallbrook, with numerous smaller intervening valleys, nooks, and glens.

Next comes the mountain region, which includes Potrero, Campo, Moreno, Pine Valley, Descanso, Green Valley, Cuyamaca, San Felipe, Santa Ysabel, Warners, Mesa Grande, Oak Grove, and Palomar.

The area of tillable land in these valleys and mesas is approximately 600,000 acres, a still much larger area being suited to pasture and grazing. The elevation of the mountain valleys varies from 2,500 to 4,500 feet. They are now chiefly devoted to stock-raising, but in time with the improvement of transportation facilities many of them will be found well adapted to the growing of small fruits and vegetables and to diversified farming.

### SOILS.

The arable soils of San Diego County may be classed under two heads: granitic and adobe; though there is very often a mixture of both, resembling adobe. The granitic soils are formed by the disintegration

of the soft red (iron-stained) or gray granite, which forms most of the country rock, and contains an abundance of vegetable matter. The adobe is mainly clay, and will probably stand a larger cropping without fertilization or rotation than any other soil, but is not as easily worked as the granitic soil.

#### COLORADO RIVER VALLEY.

To the east of the mountains, in the valley of the Colorado, is another principality, which until quite recently has been lying dormant, but now water is being brought from the Colorado River and fully 500,000 acres of the richest and most productive land on the face of the globe is being rapidly taken up by intending settlers, and these broad acres will soon add their products of alfalfa, sugar-beets, sorghum, hogs, cattle, dairy products, etc., to the output of San Diego County. Many miles of canals and laterals have already been built, construction is being pushed, and although the enterprise was only fairly commenced some three years since, water is being delivered to several thousand acres, and crops of sorghum and millet have already been harvested, thereby proving the fertility of the soil. While there are sections of land here and there containing more or less alkali, the soil of this valley, which for the greater part is below sea-level, is the silt washed down by the Colorado River during countless ages, is rich in plant food, and can be depended upon for profitable returns. Plans are being perfected for the planting of several thousand acres to alfalfa, and it is expected that the raising of cattle and hogs will be undertaken on a large scale.

The towns of Ranchita, Imperial, Paringa, Silsbee, and Calxico have already sprung into existence. Imperial boasts a general merchandise store, lumber yard, hotel, bank, church, and printing office, and is now connected with the main line of the Southern Pacific Railway by a branch running south from Old Beach Station.

#### INTERMOUNTAIN REGION.

The intermountain region is by no means valueless, being rich in minerals. Good oil indications have recently been found, and a number of wells are being bored at this writing.

The general height of the divide above sea-level is about 5,000 feet, with several lower gaps or passes, also a number of higher elevations. The following table gives the elevation of some of the principal points:

	Feet.
Smith, or Palomar, Mountain .....	6,200
San Felipe Pass .....	3,725
Temecula .....	3,200
Volcan Mountain .....	6,000
Julian .....	4,300
Cuyamaca Peak .....	6,500
Descanso .....	3,500
Pine Valley .....	3,800
Laguna .....	5,675
Campo .....	2,700
Mount Tecarte .....	3,750
Lyons Peak .....	3,400
San Miguel .....	2,850
Cajon Peak .....	3,200

#### CLIMATE.

The climate of San Diego County is unique. Gen. A. W. Greely, Chief U. S. Signal Service, is authority for the statement that the forty square miles in which the City of San Diego is situated has the most equable climate known to any mainland.

The following table, prepared by Ford A. Carpenter, U. S. Weather Bureau, giving the climatic data of San Diego, during the months of January and July, for a period of thirty years, is both interesting and instructive:

TEMPERATURE—		Jan.	July.
Average or normal	.....	55°	67°
Average daily range	.....	17°	12°
Mean of warmest (mean maximum)	.....	69°	76°
Mean of coldest (mean minimum)	.....	43°	59°
Highest or maximum	.....	80°	88°
Lowest or minimum	.....	32°	54°
HUMIDITY—			
Average relative	.....	72	78
PRECIPITATION—			
Average, in inches	.....	1.94	.01
WIND—			
Prevailing direction	.....	N.W.	N.W.
Average hourly velocity, in miles per hour	.....	5	6
WEATHER—			
Clear days—Average number	.....	15	11
Largest number	.....	25	30
Smallest number	.....	6	2
Partly cloudy days—Average number	.....	10	16
Largest number	.....	15	28
Smallest number	.....	4	1
Cloudy days—Average number	.....	6	4
Largest number	.....	22	17
Smallest number	.....	1	0
Rainy days—Average number	.....	6	Less than 1
Largest number	.....	11	3
Smallest number	.....	1	0

The winds from the Colorado delta on the east and the never-failing sea breezes fanning the western boundary of the county, together with a humidity that is as constant as the temperature is equable, combine to produce a perfect climate.

#### RAINFALL.

The following table gives the rainfall in the City of San Diego from January 1st to December 31st, for a period of thirty years:

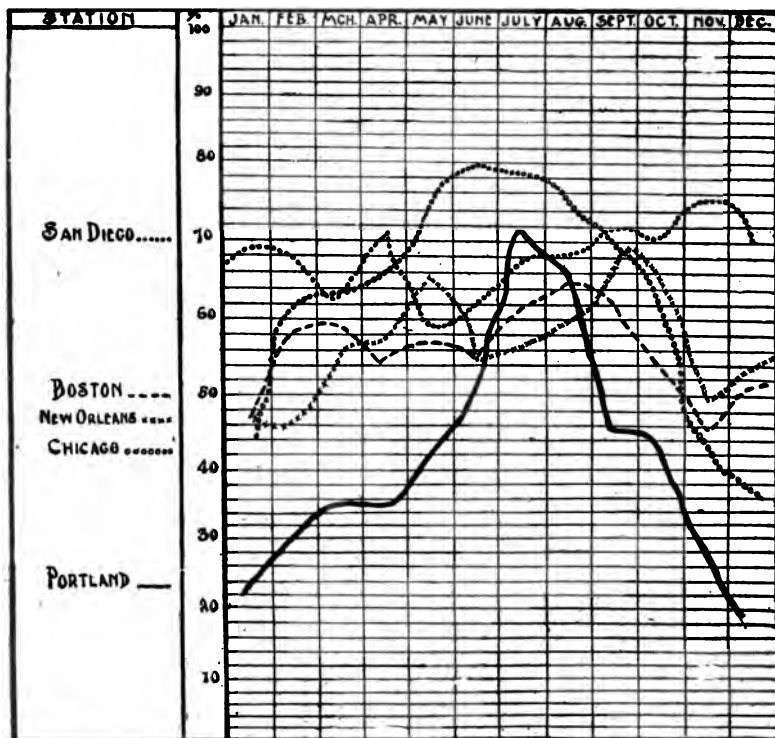
Year.	Annual Rainfall. Inches.	Year.	Annual Rainfall. Inches.
1872	6.04	1887	10.45
1873	13.01	1888	11.57
1874	10.91	1889	16.03
1875	6.80	1890	8.02
1876	7.24	1891	8.99
1877	8.12	1892	9.09
1878	13.87	1893	10.29
1879	14.71	1894	4.35
1880	10.37	1895	11.33
1881	5.00	1896	8.83
1882	9.74	1897	8.93
1883	8.01	1898	4.67
1884	27.59	1899	6.08
1885	5.73	1900	5.77
1886	15.35	1901	10.45

The rainfall increases and greater extremes of temperature occur as you leave the coast, the higher mountain peaks being often covered with snow to quite a depth during a part of the winter season. Such a climate can not but be healthy, and as the truth of the foregoing statements is getting to be more generally known, each succeeding year sees a greater number of people seeking out this wonderfully attractive "Home Land."

## SUNSHINE.

The following chart not only shows the average monthly percentage of sunshine, but also indicates in a striking manner the fact that San Diego has its minimum of sunshine during the summer season, an all-sufficient reason for the remarkably cool and pleasant summers for which the place is noted:

AVERAGE MONTHLY PERCENTAGE OF SUNSHINE.



## POPULATION.

The population of San Diego County, according to the last census, is 35,090, of which more than half, or 17,700, reside in the city of San Diego.

## CITIES AND TOWNS.

*San Diego.*—The modern city of San Diego was founded by A. E. Horton, Esq., in 1867. The situation is not only sanitary and attractive, with its hills and slopes following the curves of the beautiful bay so well protected by Point Loma, but it is also admirably adapted for the ocean commerce that is now seeking entrance through the Silver Gate. Numerous wharves extend into deep water, and in their neighborhood may be found lumber yards, planing mills, warehouses, foundries, etc.; then comes the retail business blocks, many of them very handsome

structures; and beyond these, spreading out over the undulating hill land, is the residence portion of the city, hundreds of charming homes filling up block after block. The electric street railway system is equipped with modern cars and is complete in every respect. Water is provided in abundance, the supply and distribution being controlled by the municipality. The sewerage system was wisely planned and is ample for a population of one hundred thousand. The streets of the city are well lighted by electricity. San Diego's schools, private and public, have an excellent reputation. An attractive public library, made possible by the generosity of Andrew Carnegie, Esq., supplemented by the liberality of the citizens of San Diego, has just been completed. Besides several weekly papers, the city supports three excellent dailies—one morning and two evening. A large and handsome opera-house, perfect in its appointments, is on the circuit of the very best theatrical and operatic companies. The different religious organizations worship in attractive edifices; secret societies and benevolent associations have their lodge rooms; and numerous musical and literary clubs are supported by an active membership of ladies and gentlemen. The Country Club, a prosperous institution, maintains extensive and well-kept golf grounds. There are several strong banking institutions in the city, and a large number of excellent retail stores, where the variety, quality, and price in all lines of goods will satisfy the most economical and particular. The housekeeper will always find the markets well supplied with meats, game, fish, vegetables, and fruit. The hotel accommodations of the city are excellent, and there are a number of sunny modern lodging-houses, where rooms may be obtained at reasonable rates, while the restaurants of the city are noted for their cheapness and excellence. Houses, large and small, furnished and unfurnished, may be had at reasonable rentals. For invalids and those requiring special medical and surgical care, there are, pleasantly situated within the city's limits, several sanitariums, thoroughly modern in their arrangements, with experienced physicians, and trained nurses in constant attendance.

*Coronado* is situated just across the bay from San Diego, with its big hotel and many other attractions. This property is mainly under the control of the Coronado Beach Company, which is bending every effort to build up a city of beautiful homes, besides making of the place the most attractive summer and winter resort on the Pacific Coast, if not in the United States. The resident population of Coronado is 935.

*National City*, four miles south of San Diego, has a population of 1,086, and is the center of the lemon industry of San Diego County, a large manufactory of citrus products being located at this point.

*Escondido*, a place of 755 inhabitants, is attractively situated in the fertile valley of the same name, and is one of the most prosperous towns in Southern California.

*Oceanside*, about 30 miles north of San Diego, has a population of 330. This place is on the main line of the Southern California Railway, with branches running to Escondido and Fallbrook.

*Villages*.—The above are the only towns whose population is given by the last census, but there are a number of other villages scattered throughout the county, where you will find churches, schools, stores, etc., the centers of an active development, generally connected by

telephone with San Diego, such as Alpine, Ballena, Banner, Bernardo, Bonita, Bostonia, Campo, Carlsbad, Chula Vista, Dehesa, Del Mar, Descanso, Dulzura, El Cajon, Encinitas, Fallbrook, Foster, Hedges, Helix, Jamul, Julian, Lakeside, La Mesa, Lemon Grove, Merle, Mesa Grande, Miramar, Moosa, Nellie, Nestor, Ogilby, Olivenhain, Otay, Pala, Potrero, Poway, Ramona, Richland, San Luis Rey, San Pasqual, San Marcos, Santa Ysabel, Santee, Sorrento, South San Diego, Stowe, Sunnyside, Tia Juana, Twin Oaks, Valley Center, Vista, Warner, Witch Creek, and Wynola.

### SCHOOLS.

As an evidence that education keeps pace with the population, the County Superintendent of Schools reports that there are one hundred and fifty school-houses distributed through the county, the instruction in which is up to the usual high standard found throughout California.

### GOOD ROADS.

The Board of Supervisors of San Diego County have done and are doing good work in the way of road-building, the most distant and mountainous places being readily reached over excellent highways. It is a matter of surprise and favorable comment that so much has been accomplished with such a large mileage of roads to be looked after and with so small an amount of funds available for their care.

### TRANSPORTATION.

From the port of San Diego, which has one of the best harbors on the Pacific Coast, transportation may be had by either rail or water, thus assuring low rates upon all classes of products, a wide range of which is made possible by the difference in elevation of the various parts of the county.

### WATER DEVELOPMENT.

The progress of any locality in the southwest is largely dependent upon its water-supply, and in this line of development, San Diego County has made excellent progress, as the following table will show:

PRINCIPAL RESERVOIR SITES IN SAN DIEGO COUNTY.

Name of Reservoir.	Elevation above sea- level at base of dam.	Capacity, in million gallons.
	<i>Feet.</i>	
Barrett (under construction).....	1,600	15,226
Cuyamaca (built).....	4,650	3,718
Dye Valley.....	2,200	1,275
Escondido (built).....	1,300	1,150
La Mesa (built).....	453	2,000
Lower Otay (built).....	400	21,653
Moreno (under construction).....	3,100	15,226
Pine Valley.....	3,700	6,800
Pamo.....	803	16,000
San Luis Rey.....	2,613	62,960
Santa Maria.....	1,500	3,000
Sweetwater (built).....	145	5,882
Upper Otay (completed to 70 feet contour).....	540	1,000

Water is impounded mainly for the citrus orchards of the coast section, the higher valleys requiring but little or no irrigation for their crops of cereals, deciduous fruits, olives, vegetables, etc.

### VARIETIES OF FRUIT.

Following is a list of the varieties of fruit grown in San Diego County, and the time they may be gathered:

Oranges, all the year.	Guavas, nearly all the year.
Lemons, all the year.	Loquats, May and June.
Limes, all the year.	Strawberries, nearly all the year.
Figs, July to Christmas.	Raspberries, June to September.
Apples, July to November.	Blackberries, June to November.
Pears, July to November.	Currants, May and June.
Grapes, July to December.	Watermelons, July to December.
Peaches, June to November.	Mulberries, July to December.
Apricots, June to September.	Nectarines, August.
Plums and Prunes, June to September.	Olives, December and January.
Japanese Persimmons, November and December.	Pomegranates, September to December.
	Quinces, October to December.

Last year's crop of apples grown in the justly famed Julian apple belt represented from 30,000 to 50,000 boxes.

### ASSESSOR'S REPORT.

In the report of the County Assessor made July 1, 1902, the following data is given:

#### *Number of Fruit Trees Growing in the County.*

	Bearing.	Non-Bearing.
Apple.....	20,000	20,000
Apricot.....	46,500	27,700
Cherry.....	3,000	2,500
Fig.....	18,000	11,500
Olive.....	40,000	82,500
Peach.....	60,000	80,000
Pear.....	18,000	12,500
Prune (French).....	40,000	70,000
Prune (other kinds).....	6,000	4,000
Lemon.....	170,000	250,000
Orange.....	75,000	45,000
Almond.....	5,000	14,500
Walnut.....	4,500	16,000
Grape-fruit.....	8,000	12,000
Total.....	532,000	648,200

#### *Number of Acres Sown to Hay and Grain for the Crop of 1901.*

	Acres.
Wheat.....	10,000
Oats.....	4,000
Barley.....	6,000
Corn.....	200
Hay.....	25,000
Total.....	45,200

#### *Area of Grapevines Growing (All Bearing)*

	Acres.
For table.....	275
For raisins.....	4,850
For wine.....	450
Total.....	5,575

## LAND VALUES.

Unimproved citrus land is worth from \$50 to \$350 per acre with water. Improved orchards from \$200 per acre up. Deciduous fruit, olive, grape, and general farming land, \$5 to \$50 per acre. Values are not inflated, and there are many good and safe investments for capital.

## CITRUS FRUITS.

It is estimated that a carload of citrus fruit is shipped out of Southern California every five minutes during the season, a fair proportion of which comes from San Diego County.

The lemon and orange culls, which were formerly allowed to rot and sour the land, are now taken to the citrus-products factory and turned into citric acid, oil of lemon, oil of orange, extracts, etc.

## OLIVE OIL—HONEY.

San Diego County olive oil received a gold medal at the last Paris Exposition. The demand for a pure olive oil is much greater than the supply, and the superiority of the California pickled olive is creating an increased demand for that product.

The county's honey crop for 1901 amounted to one hundred carloads, having a value of about \$1,000 per car.

## RAISINS.

The raisins grown in the Escondido and El Cajon valleys, being dried in an equable climate, entirely free from hot scorching summers, have a soft skin and are superior in that respect to those produced elsewhere in the State. This, also, may be said of other dried fruit.

## SILK CULTURE—A HOME INDUSTRY.

There is every reason to believe that in the near future the cultivation of the silkworm will hold a most important place in the industrial development of San Diego County. The climatic conditions are so perfectly adapted to the delicate constitution of the worm, and the foliage of the mulberry tree may be had in such wholesome condition practically during the entire year, that instead of the industry being restricted, as elsewhere, to a season of but a few weeks' duration, it can be carried on during the entire twelve months, thus affording women and children an easy and pleasant way of assisting in providing for the family maintenance. Many acres have been set out to mulberry trees, and it may be said that while the industry is yet in its infancy, a good start has been made, with every promise of success.

## DAIRYING.

The last two years, but more especially the past twelve months, have witnessed a marked development of the dairy industry throughout San Diego County, made possible largely by the installation of cream separators at different points convenient to stage and railway communication with the city of San Diego. While there are a few creameries



operating outside of the city in connection with the different large ranches, by far the greatest quantity of the cream produced is shipped to San Diego and manufactured into butter by the New England Dairy and Creamery. This concern has a capacity of three thousand pounds of butter per day, and turns out an even product of high grade, which always commands the highest market price. The following described plants are now in operation, furnishing cream to the factory above mentioned:

Location.	Name.	Capacity of Plant, in Pounds of Milk per Hour.	Number of Cows.
San Luis Rey .....	San Luis Rey Creamery .....	2,500	300
San Dieguito .....	Gilbert & Connell .....	1,750	150
San Pasqual .....	C. L. Holliday .....	1,750	150
Bonsall .....	F. Loveland .....	1,750	150
Ramona .....	Ramona Creamery .....	1,000	100
Sorrento .....	W. G. Baker .....	1,000	100
Descanso .....	Philip Brown .....	600	40
Escondido .....	James Black .....	600	40
Escondido .....	A. H. Olancy .....	350	15
Escondido .....	J. B. Carroll .....	350	30
Escondido .....	Thomas Carroll .....	350	15
Escondido .....	Cravath & Dye .....	600	50
Escondido .....	F. W. Davis .....	600	50
Escondido .....	Robert Daly .....	600	30
Escondido .....	M. Reidy .....	600	75
Poway .....	John Frank .....	600	40
Poway .....	John Lawson .....	600	30
Poway .....	W. R. Lawson .....	600	30
Poway .....	Dan Luce .....	600	30
Poway .....	Miles Nelson .....	350	15
Poway .....	E. G. Norton .....	600	75
Poway .....	J. W. O'Connell .....	600	30
Poway .....	Don Smith .....	600	20
Poway .....	C. C. Watson .....	600	30
Ballena .....	J. C. Fergeson .....	350	15
Ballena .....	J. W. Warnock .....	600	30
Del Mar .....	William Froelich .....	600	30
Del Mar .....	A. C. Welts .....	600	20
Nestor .....	George & Son .....	600	50
Nestor .....	W. F. Springer .....	600	15
Nestor .....	H. F. Schnell .....	350	80
San Diego .....	— Guyalarmetti .....	600	20
Sorrento .....	— McGonigle .....	1,000	35
Olivenhain .....	Gautner & Wallenstein .....	600	35
Olivenhain .....	Keoebu Fernando .....	600	40
Olivenhain .....	T. W. Teten .....	600	20
Olivenhain .....	A. Wiegand .....	600	30
Descanso .....	H. R. Higgins .....	600	40
Almond Station .....	Howard & Lonsteller .....	600	70
Cottonwood .....	William Healey .....	350	10
Foster Station .....	— Keith .....	600	20
Santee .....	Mrs. McKoon .....	350	20
Santee .....	C. Rinde .....	350	15
Santee .....	J. S. Stockton .....	600	40
Viejas .....	Benton & McCain .....	600	30
Lakeside .....	W. M. Miller .....	350	30
Lakeside .....	J. W. Swanson .....	350	20
Campo .....	— Ortega .....	350	20
San Pasqual .....	E. Roberts .....	600	40
San Pasqual .....	Jagger & Preston .....	600	40
Lusardi .....	M. A. Stockwell .....	600	20
San Diego .....	— Rens .....	600	40
Fallbrook .....	J. B. Sample .....	600	40
Vista .....	J. B. Squires .....	350	20
Santa Ysabel .....	Santa Ysabel Creamery .....	7,500	500
Santa Ysabel .....	Rose Glen Creamery .....	1,750	200

It will be readily seen that the above described plants are not running to their full capacity; and not only is the number of cows being increased, but it is safe to assume that the remarkable success of those now engaged in the industry will result in doubling the number of separators throughout the county within the next twelve months.

The foregoing enumeration does not include the San Pasqual creamery, supplied by 150 cows; Woods & Olds' creamery, supplied by 150 cows; and Jersey Dairy Company, supplied by 200 cows.

Nor does it include the following list of dairies whose entire product of sweet milk is sold to customers throughout the city of San Diego: G. N. Gilbert's dairy, having 300 cows; G. H. Rodman's dairy, having 30 cows; Jersey Dairy, having 30 cows; Allen Bros.' dairy, having 60 cows; Rengelli's dairy, having 20 cows; and A. Matt's dairy, having 40 cows.

The farmer, even in the most isolated locality, can now take his milk to the district separator, receive cash for his cream, and have the skim-milk to take home for the hogs, thus securing a steady income.

The demand for good dairy products is continually increasing, not only for home consumption, but also to supply the Hawaiian Islands and the trans-Pacific trade. The United States Department of Agriculture is now trying experimental shipments to different parts of Central and South America, where it is probable that quite a trade can be worked up, provided our manufacturers are careful to continue supplying a first-class product.

The cow is proving to be a money-maker and a mortgage-raiser, giving value to many neglected ranches and opening up a bright and prosperous future for the farmers throughout San Diego County.

#### SMALL INVESTMENTS.

The question is often asked, What can a man do in San Diego County with from \$2,000 to \$5,000? Many instances of success may be cited where a beginning was made with very much less, and it would seem that this should be so under conditions so favorable, where the soil is so rich and productive, and where, in addition to the ordinary horticultural and agricultural pursuits, there are so many opportunities for the development of industries as yet comparatively new to the southwest, such as tobacco-raising, silk and cotton culture, the growing of flower bulbs, seeds, etc.

The cost of living is reasonable, and the price of building materials compares very favorably with other parts of the country. The opportunities for getting products to market are quite good to-day, and with the completion of a direct line of railway east from San Diego, a route for which is now being surveyed under the auspices of the San Diego Chamber of Commerce, the county will be specially favored as regards transportation.

#### MINING.

In addition to the horticultural and agricultural interests of the county the opportunities for investments in mining are very attractive. One of the largest producing gold mines in the State is located at Hedges, in the eastern part of the county, while the towns of Julian and Banner are almost entirely supported by the mines in their vicinity.

Besides gold, some excellent copper prospects are being developed. Silver, zinc, lead, and tin have been found, as also antimony, while the largest deposit of lepidolite known is situated near Pala, in the northern part of the county. Kaolin of good quality has been found, and considerable development is now going on for oil, which, it is thought, will be found in large quantities throughout the county. Coal prospects also exist and are receiving some attention. The following minerals are also found: Asbestos, cement, fire clay, Fuller's earth, gypsum, limestone, manganese, marble, mineral paint, mineral water, salt, mica, graphite, sulphur, and alum.

Quite recently a deposit of unusually beautiful tourmaline crystals was uncovered near Mesa Grande, from which gems valued at many thousands of dollars were taken out.

#### SPORT.

The sportsman reading this article will probably ask what of the shooting and fishing? Quail are abundant in the foothills, with an occasional deer to reward the hardy hunter; while the variety of fish to be caught in the bay and ocean is almost endless.

In the summing up it may be truthfully said that no part of the United States offers greater inducements to seekers after health, pleasure, or profit than does San Diego County, California, concerning the resources of which the Secretary of the San Diego Chamber of Commerce will always be pleased to forward detailed information when requested to do so.

## SAN JOAQUIN COUNTY.

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San Joaquin County lies at the head of the San Joaquin Valley, and is bounded by Stanislaus, Calaveras, and Amador counties on the east, Stanislaus and Santa Clara counties on the south, Alameda, Contra Costa, and Solano counties on the west, and Sacramento County on the north. The two great rivers which drain the State, the Sacramento from north to south, and the San Joaquin from south to north, form their junction near the northwest corner of this county, and pour their united waters into Suisun Bay. The San Joaquin River intersects the county, and is navigable to its southern boundary the year round. The area of this county is 1,370 square miles, or 870,000 acres, generally level valley land. In the northwest, along the rivers, is a region of tule land and marshes; through the northern part of these tule lands the San Joaquin and its tributaries flow in many channels to their junction with the Sacramento. Throughout this region are numerous islands, which are subject to overflow. They have rich soil, and such as are leveed are under cultivation. Extending northward are the sandy lands, the two sections being separated by a broad belt of black loam and adobe land. The foothill region comprises a narrow strip along the eastern boundary. The lands forming the delta comprise about one fifth of the land of the county. These had to be protected from overflow by the construction of levees before they could be brought under cultivation. About 150,000 acres are under cultivation.

The Mokelumne River, an important tributary of the San Joaquin, flows through the northern part of the county, and is navigable for a considerable distance from its intersection with the San Joaquin. The Calaveras River, a stream carrying much water in the rainy season, flows through the central portion of the county.

### CLIMATE.

What has been said of the climate of other counties in the San Joaquin Valley will apply to San Joaquin County. The months of June, July, August, and September are hot, especially July and August, when the mercury will frequently pass above the hundred mark. But despite this degree of heat, it is not enervating, and except on extremely hot days, which are rare, the summer temperature is not disagreeably hot. In the winter months the mercury will sometimes drop below freezing, and harsh frosts in the early morning are not uncommon. The location of the county in the central portion of the State, and so near the only great pass through the Coast Range, by which the waters of the two great rivers of the State find their outlet to the ocean, renders the locality subject to the most favorable natural climatic influences. Heavy fogs are rare, and the chilling winds which sometimes prevail on the coast are much modified before they reach the interior.

The following table of rainfall from 1870 to 1900 will give a good idea

of the annual precipitation in San Joaquin County. In July and August rainfall is so rare that it may be said never to rain in those months:

## RAINFALL AT STOCKTON.

The official record for calendar years.

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1870....	.37	2.35	.99	.07	.12	.31	.00	.00	.00	.15	.87	1.35	6.38
1871....	1.47	1.70	.30	.69	.40	T.	T.	.00	.00	.14	1.09	11.49	17.28
1872....	2.58	3.46	1.43	.51	.06	.04	.00	.00	.00	.03	1.37	6.25	15.73
1873....	.75	3.97	.47	.44	.00	.00	.03	.00	.00	.31	.76	3.94	10.67
1874....	3.94	1.78	3.33	.56	.58	.00	.00	.00	.23	1.09	3.45	.23	15.19
1875....	4.54	.23	.37	.00	.00	.45	.00	.00	.00	.01	5.86	2.85	14.86
1876....	3.26	2.65	3.23	.40	.00	.00	.07	.00	.00	2.11	.30	.00	12.02
1877....	3.23	.23	.75	.00	.32	.00	.00	.00	.00	.36	.72	1.31	7.01
1878....	5.45	6.70	2.56	1.01	.65	.00	.00	.00	.00	.34	.51	.42	17.64
1879....	2.28	2.94	2.06	1.75	.96	.20	.00	.00	.00	.58	2.05	1.67	14.49
1880....	1.54	1.32	.89	6.28	1.01	.00	.00	.00	.00	.00	.04	7.09	18.17
1881....	2.83	2.50	.82	1.11	.29	.00	.00	.00	T.	.24	.73	1.65	10.17
1882....	1.27	.84	2.64	2.21	.00	.11	.00	.00	.50	1.86	1.11	.27	10.81
1883....	2.55	.35	2.55	1.23	4.84	.00	.00	.00	.18	.93	.51	1.00	14.14
1884....	1.94	4.43	6.06	2.94	.50	1.27	.00	.00	.19	1.40	.00	5.69	25.02
1885....	1.23	.00	.26	.77	.00	.05	.00	.03	.00	.00	6.08	1.24	9.66
1886....	5.36	.04	1.21	3.43	.00	.00	.00	.00	.00	.22	.84	.82	11.92
1887....	.36	3.78	.21	1.57	.00	.03	.00	.00	.27	.00	.52	3.06	9.80
1888....	3.36	.48	2.29	.28	.55	.00	.00	.00	.88	.00	2.70	2.42	12.96
1889....	.31	.98	3.98	.14	1.52	.06	.00	.00	.00	3.39	3.27	6.17	19.82
1890....	4.99	1.66	1.26	1.08	.55	.00	.00	.00	.57	.00	.00	2.31	12.42
1891....	.95	3.19	1.14	1.58	.30	.05	.00	.00	.20	.05	.07	4.58	12.11
1892....	.95	1.25	2.50	.81	1.44	.36	.00	T.	.08	.79	3.66	2.99	14.83
1893....	2.68	2.14	2.59	.96	.00	.00	T.	.00	.13	.00	2.88	1.42	12.30
1894....	3.88	4.93	.45	.10	1.84	.70	.00	.00	1.76	1.32	.56	6.80	22.34
1895....	5.24	1.70	1.00	.63	.70	.00	.00	.00	.50	.26	1.09	1.20	12.39
1896....	6.09	.19	1.76	2.65	.86	.00	T.	.19	T.	1.11	2.30	1.12	16.37
1897....	1.81	2.85	2.78	.37	.09	T.	.00	.01	.03	1.37	.39	1.23	10.93
1898....	.61	1.32	.84	T.	1.11	.03	.00	.00	.35	.88	.56	1.50	7.23
1899....	3.15	.18	6.58	.53	.47	.20	.00	.05	.00	3.64	2.90	1.83	19.50
1900....	2.92	.37	1.45	2.26	2.72	.00	.00	.00	.12	1.83	4.87	1.09	15.30

## SOILS.

Although there is a great variety of soil, it may be confidently asserted that there is no utterly barren or unproductive lands in the whole of San Joaquin County. Even in the limited mountainous district in the southwestern portion, which is so rugged and hilly as to be incapable of profitable cultivation, the land affords a fine range for stock in seasons when the usual rainfall causes the native grasses to grow in abundance upon the steep hillsides.

The western portion of the county consists of a rich delta, bordering the San Joaquin and Mokelumne rivers, which here have channels dividing the lands into tracts, which are designated as islands. The natural growth upon this land is a species of flag, here termed tule, which rankly grows upon the overflowed ground, and appears to the traveler upon the steamers plying upon these rivers, in some seasons of the year, like immense fields of green grain. As this kind of vegetation would indicate, the land was formerly constantly subjected to overflow, and only in the later months of the drier seasons was it free from water so that stock could range upon it. It has, however, been demonstrated that this land is among the most productive and valuable in the State, and that by the expenditure of comparatively small amounts for the

construction of levees to protect it from overflow, it can be made to produce a great variety of crops. Although the reclamation of these lands was at first regarded as problematical, and many mistakes and failures marked the progress of the work during its earlier inception, enough has now been accomplished to show that the work upon a large scale is wholly practicable, and the success that has attended the efforts of those who have given the subject proper attention when constructing their reclamation works, so as to effectually secure the object sought, will encourage the owners of most of this character of land to provide for bringing it under cultivation.

In some of the reclaimed districts there are orchards of peaches and pears, which are very productive, and the small fruits, such as blackberries and strawberries, are also grown there with great profit.

In the central portion of the county and surrounding Stockton there is a large area of adobe land, a black, clayey soil, from 4 to 8 feet in depth, resting upon a subsoil of marl or a clayey hardpan. While this soil is intractable and not easily worked except when in a suitable condition, or when it contains exactly the proper amount of moisture, it is remarkably fertile. This soil with irrigation and careful cultivation will produce a great variety of crops, and has been found especially adapted to the growth of choice varieties of table grapes, as well as the pear and other varieties of fruit trees. Through the portion of the county where the adobe land predominates there are, however, many varieties of soil, all of which have been proven to be equally good for the production of the cereals, but some better than the adobe for other crops. While all varieties appear to be rich in plant-food, some are more easily worked and contain different portions of sand and alluvium matter, which makes them more suitable for growth of trees and vines.

That portion of the county lying north of the Mokelumne River was originally covered with a growth of white and live oak trees, together with chaparral and other underbrush. It was not regarded with favor by the first settlers, and was not cleared and brought under cultivation for several years after farming had been carried on to a large extent in other portions of the county. It is now, however, regarded as among the most valuable land in the State.

Along the Mokelumne there is considerable bottom land, which is overflowed in seasons of extreme high water, but which can be cultivated after the water recedes. This land is extraordinarily fertile and capable of producing an almost endless variety of crops. Along the lower Mokelumne is a large extent of territory which was classed as swamp land. Much of this has been thoroughly reclaimed, and is now profitably cultivated to cereals and other crops. Staten Island contains about 3,000 acres, and a portion of this delta formed by the two channels of the Mokelumne has been reclaimed at great expense, and is now made very productive.

South of the Mokelumne, and extending from the swamp land to the foothills on the east, is a large area of very valuable land, the soil of which is a sandy loam, easily cultivated and well adapted to the growth of vines and fruit trees. The grape can be here successfully grown without irrigation.

In the eastern portion of the county, extending from the Mokelumne River south for about 12 miles, there is considerable hilly and rolling land, the soil of which is varied, but generally a red

clay, and sometimes containing gravel. At present most of this land is cultivated to wheat, but it is believed by many to be choice vineyard land, as the grapevine has been profitably grown in many places.

The land bordering the Calaveras River has generally been considered among the best in the county. Its rich, alluvial soil has always produced large crops of wheat, and those who have planted trees and vines in this portion of the county have generally been successful in growing them without irrigation.

In the southeastern portion of the county there is a large area of land with sandy soil, which was originally not considered as valuable as those portions of the county where heavier, clayey soils predominate. It is a noticeable fact, however, that the farmers upon the sandy soil of the county are generally prosperous, and although their land may not produce so much per acre, they generally feel sure of a crop.

Upon the west side of the San Joaquin River in this county there is a body of land from 8 to 10 miles in width and extending for 25 miles, which in favorable seasons has produced extraordinary crops of wheat. The soil is a deep, sandy loam, in many places from 30 to 40 feet to the hardpan, and with a supply of water it could be made the most productive and valuable land in the county. This large body of land is an important portion of San Joaquin County, and must eventually be furnished with means of artificial irrigation from the San Joaquin River, which in seasons when irrigation is necessary to secure the growth of vegetation pours its torrents of water past the land to the sea.

#### IRRIGATION.

The Mokelumne in the northern, the Calaveras in the central, and the Stanislaus forming part of the southern boundary of the county, are all important streams, and can be used for irrigation; but irrigation is not generally practiced, except for alfalfa, as other crops can be produced without recourse to it. Two irrigation districts have been formed, and one, known as the Mokelumne Ditch and Irrigating Company, is in operation irrigating land near Lodi. This company was organized in 1876, with a capital stock of \$100,000, for the purpose of taking water from the Mokelumne River for irrigation, manufacturing, and mining purposes. The capital stock has since been increased to \$300,000. The company has built a dam 32 feet high and 277 feet long, and the line of the main canal has been surveyed from the dam to Bear Creek, a natural channel, which will be used in its distributing system. The main canal is 30 feet wide on the bottom, 42 feet at water-surface, and will carry 6 feet of water. The grade of the canal is sufficient to give it a capacity of 598 cubic feet per second. The amount of land lying under the company's main canal adapted to irrigation purposes is about 120,000 acres. It is the intention of the company to furnish water for manufacturing purposes.

A company with a capital stock of \$500,000 has secured the rights on the Stanislaus River, and the work is progressing rapidly. By this ditch the southern and eastern portions of the county will be irrigated.

The Mokelumne Land and Water Company has already expended \$50,000 on a stone dam which is built across the Mokelumne River. This will turn a stream of water through a ditch 20 feet wide on the

bottom and 50 feet on the top, over the northern and central portions of the county.

The Weller Ditch Company will furnish the central portion with a never-failing supply of water.

The farmers in the southeastern part of the county have taken steps to form an irrigation district under the Wright law, instead of taking water from the ditch of the Stanislaus and San Joaquin Water Company. Some time ago a meeting of the principal land-owners in the territory affected was held and it was decided to make arrangements to extend the canal from Escalon through quite a section of property to Ripon. This canal will probably be built the coming year.

Within a very short time San Joaquin will have the best irrigating system in the United States.

#### FRUITS AND NUTS.

Experiments have been made to test the capabilities of the soil and climate of San Joaquin County for the production of a large variety of fruits, and while it has been demonstrated that in locations where the conditions are favorable almost every kind of fruit tree produced in the temperate and semi-tropical regions can be successfully grown, it must be admitted that particular care should be given to the selection of varieties that are adapted to the different localities. The pear, fig, and almond tree will flourish with proper cultivation in almost all portions of the county, and in many localities without artificial irrigation. The pear tree, if given proper attention, has been proven to be very productive and orchards have yielded a large profit to their fortunate owners. Even upon the heavier and more intractable soils it does well, and seems to be but slightly affected by the summer drought after the tree is well rooted, as it seems to draw sufficient moisture from the subsoil to secure for itself a healthy growth, and also to enable it to produce a crop of fruit. In the vicinity of Stockton, and upon land that is not regarded as the best for the growth of trees, there are trees that have regularly produced fine crops of pears, which have not been artificially irrigated for many years.

The fig tree also seems to be especially adapted to this soil and climate, and is as tenacious of life as the oak trees which were growing upon this land when it was settled upon by Americans. The black California fig was very generally planted by the early settlers, and there are now many trees scattered throughout the State which have neither been cultivated nor irrigated for years, and yet they annually produce crops of figs, and seem to be little if any affected by the dry seasons which are so destructive to many other kinds of trees. It has also been found that other varieties of figs, which are so highly prized in other countries, and from which the fig of commerce is produced, can be successfully grown in this county, and that the imported varieties are as hardy and as well adapted to this climate as are those varieties which have been so long cultivated as to be almost natives of this State, and like them, produce two crops each season.

The almond is another tree which has been found peculiarly well adapted to the locality, and can be profitably grown throughout the larger portion of the county. Trees which have arrived at the age when a full crop can be expected are now proving profitable to their



owners, and almond orchards will eventually be among the productive industries of the county.

Walnut trees, including the black, English, and French, also do well upon most of the land in this county, and although on account of their slow growth they have not been generally cultivated, they are now beginning to be looked upon with great favor, and many are being planted each year.

The peach, apricot, and nectarine are grown successfully throughout the county, but most profitably upon the bottom lands and soils that are naturally moist.

The prune has been found to do well here, and more trees of that variety are being annually planted. The quince also flourishes, and is very productive in all portions of the county.

The small fruits, such as blackberries, raspberries, strawberries, etc., are grown throughout the county, and are particularly productive upon the reclaimed lands and the bottom lands adjacent to the rivers. These fruits can be raised throughout the county upon any land that can be irrigated, and large quantities are produced to supply the home market, and also for shipment to San Francisco.

The larger part of San Joaquin County is adapted to fruit culture, but the principal sections now devoted to orchards are found along the Mokelumne and San Joaquin rivers, at Lodi, Stockton, and the numerous islands formed by the San Joaquin. This county is adapted to a very wide range of fruits, chief among which are apricots, peaches, prunes, almonds, with some apples, pears, plums, olives, and figs. A very large quantity of berries of all kinds is grown in the island district. These fruits are principally shipped to Chicago, although a large amount of the second-class fruit finds its way to the canneries of Stockton, San Francisco, and Sacramento. Besides the fruit shipped green, a large amount is annually dried, which is disposed of to San Francisco and Eastern jobbers. In packing for the Eastern market, peaches are packed in 20-pound boxes, pears in 40-pound boxes, and prunes in boxes and crates. The regulation packages are, peach boxes, 24 by 12 by 4½ inches, holding two tiers and weighing 20 pounds. These cost 5 cents each to the grower. Pear boxes are of the same dimensions, but are 9 inches deep, and cost 9 cents.

The shipment of green fruit from San Joaquin County in 1891 was 650 tons; but as the orchards were generally young, this quantity has been greatly increased from year to year until it is estimated that fully 10,000 tons were shipped in 1901.

There has been a great deal of planting done in many sections of the county the past year, principally apricots, almonds, olives, pears, peaches, and grapes. Grapes especially are receiving much attention. In the vicinity of Lodi, ex-Senator Langford is planting 240 acres; Ing Bros., 90; Keen Bros., 80; J. C. Thompson, 80; or a total of 480 acres in that section alone. Besides these there will be many other smaller vineyards planted.

#### ACREAGE AND VARIETY OF FRUIT IN SAN JOAQUIN COUNTY.

Acres of Grapevines growing:	Bearing.	Non-Bearing.	Total.
For table .....	960	1,550	2,510
For raisins .....	280	390	670
For wine .....	870	1,217	2,087

Number of Fruit Trees growing:	Bearing.	Non-Bearing.	Total.
Apple .....	1,410	975	2,385
Apricot .....	81,483	17,000	99,083
Cherry .....	4,006	3,720	7,726
Fig .....	6,010	1,240	7,250
Olive .....	19,790	5,092	24,882
Peach .....	75,621	18,211	93,832
Pear .....	15,826	3,940	19,760
Prune (French) .....	45,209	18,700	63,909
Prune (other kinds) .....	13,740	12,600	26,340
Lemon .....	446	275	721
Orange .....	1,228	1,540	2,768
Almond .....	126,757	40,312	167,069
Walnut .....	720	570	1,290

## GRAIN AND HAY.

As this is a great grain section, many acres are every year sown to the principal grains. In 1901 there was planted the following acreage:

	Acres.
Wheat .....	550,927
Oats .....	2,340
Barley .....	235,750
Corn .....	600
Rye .....	19,000
Hay .....	3,895

## VEGETABLES AND SEEDS.

The raising of asparagus is rapidly becoming one of the chief industries. The land in the western part of the county is particularly well suited to the growing of this vegetable and hundreds of acres are now being put in. Two large canneries handle the product, two will be built this spring, and a third will be put up later in the season. The Hickmott Asparagus Company has 3,000 acres under cultivation and last year shipped 150,000 cases of canned goods.

Celery is to be planted this year on a large scale. Five hundred acres will be put in by one person, who estimates that the land will yield 1,200 bunches (twelve heads to a bunch) to the acre. Los Angeles capitalists who have recently purchased a large tract of this peat land will also have a large acreage of celery.

The Cox Seed Company of San Francisco has rented 500 acres for the propagation of miscellaneous seeds, regarding it as the best location for that purpose in California. The company changed its operations from another county, where it has for several years engaged in seed-raising, for the following reasons: Cheaper land, capacity to produce one third more, with one quarter less cost of cultivation, and 60 per cent less transportation.

## DAIRYING—LIVESTOCK.

Dairying is also coming to the front. Numerous skimming stations are scattered over the county, and where four years ago there was not a single creamery, four large ones are now doing a profitable business.

The raising of mules has been found to be another profitable undertaking and many farmers have engaged in it. This year 4,000 were shipped from this county, billed for the Philippines, Sandwich Islands, Kansas, and South Africa.

On the whole, San Joaquin County has the prospects of a very bright and prosperous future, and as investors are rapidly taking advantage of the low price of land, it is expected that the county will soon be settled with the large population it so richly deserves.

## SAN LUIS OBISPO COUNTY.

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San Luis Obispo County is bounded along its entire western side by the Pacific Ocean, on the north it is bounded by Monterey, on the east by Kern, and on the south by Santa Barbara County. Its area embraces 3,578 square miles, or 2,289,920 acres, and extends from the summit of the Coast Range on the east to the ocean on the west.

The county is traversed by a low range of mountains running northwest to southeast, dividing the county into two unequal parts, one third being on the coast and two thirds being in the interior. The elevation and trend of this range adapt it to catch all the rains of winter, giving it and the subjacent country an abundance of water. Springs are numerous from base to summit, and many streams run perennially through deep valleys down either slope. The largest of these streams on the western slope are the San Simeon, Santa Rosa, Villa, Old Creek, Mono, Chorro, San Luis, Pismo, Arroyo Grande, Suez, Huesna, Alamo, and Cuyama.

From the northeastern slope of this range flows the Salinas with its many branches, the San Juan from the far east, Santa Margarita, Atascadero, Paso Robles, San Marcos, Nacimiento, the latter receiving the Las Tablas, flowing northerly between the Santa Lucia and the range called the San José by the United States Geological Survey.

The valleys of San Luis Obispo County are many and fertile. West of Santa Lucia is the coast region, a broad area of foothills and valley land, with the specially named valleys of San Simeon, Santa Rosa, Green, Villa, Old Creek, Morro, Chorro, Los Osos, Laguna, San Luis, Corral de Piedra, Arroyo Grande, Huasna, and Cuyama; and east of the dividing mountains are the great valleys of San José, or Pozo, Santa Margarita, Salinas, Huer Huero, San Juan, Carrisa, Elkhorn, Estrella, Pala Prieta, Cholame, and those of many streams. The Estrella is one of the large valleys of the east, an elevated plain bordering the Estrella River, and north of it is the similar plain of Cholame.

### CLIMATE.

Along the coast frost is rarely seen—in many places never—yet grapes do not ripen well nor oranges grow successfully on the coast; but there is a distinct thermal belt, altitude 100 to 600 feet, east and north of San Luis Obispo, unknown to frost. The most delicious oranges grow in this belt. The interior valleys have a climate similar to that of the famous Salinas Valley of Monterey. The average temperature of San Luis Obispo, near the coast, varies little winter and summer, ranging from an average of 54° to an average of 62°. The interior valleys range from extremes of 32° in winter to 100° in summer, though such extremes are rare, but the average winter and average summer show much smaller differences. The average annual rainfall is 21.07 inches.

## FRUITS, NUTS, AND VEGETABLES.

Much attention is now being paid to fruit culture, though the county has not yet reached a prominent rank in this respect. In the Arroyo Grande section fruits and vegetables grow in profusion and to great size. On the coast apples and pears rank best; in the interior the prune, apricot, and olive; on the hills the choicest grapes, for table, raisins, and wine, are produced. Near Templeton is a 250-acre prune orchard. Around Paso Robles much attention is now being given to fruit culture, although the orchards are yet young. Other admirable fruit sections are the Arroyo Grande Valley, the Salinas Basin, and the San José Valley. There is no limit to the possible development of this county in fruit culture, whenever enterprise pushes it and the outside markets are cheaply reached.

The total shipments of apples from the Arroyo Grande Valley the past season amounted to 45,000 boxes. Of this amount 23,000 boxes went to Los Angeles.

The production of English walnuts has just sprung into the front rank of the industries of the county. It is confined chiefly to the Corral de Piedra Valley, on the coast side of the Santa Lucia Mountains. Most of the trees are still young, but the yield was considerable last year. John H. Thompson, who planted out the first grove nine years ago, sold \$3,000 worth of walnuts from a twenty-acre tract the past season.

Potatoes, beans, squash, cabbage, onions, tomatoes, and other vegetables are grown extensively and attain enormous size. Beans figure largely among the exports of the county.

The yield of beans in the Arroyo Grande Valley during the season of 1901 was the largest in the history of the county, and the harvest was not finished until late in October.

## GRAIN AND HAY.

All the cereal crops are grown on the uplands. The wheat shipments along the railroad from Paso Robles, Templeton, and San Miguel are very large. The wheat of this section bears a very high reputation for fine quality and high percentage of flour.

The wheat crop in the Cholame Valley, on the Estrella Plains, in the northeastern part of the county, has not been equaled in the past fifteen years. All the warehouses are filled, and a large portion of the crop has already found its way to market. From present indications the acreage to be sown to grain for the season of 1902 will be one third larger than that of any past season. Much of the land in the eastern part of the county, which in previous years has been utilized for stock ranges, has been brought under cultivation through the encouragement of last season's fine crop.

Considerable quantities of hay, both grain and alfalfa, are raised, the crop last year being large, with the prospect that the crop for 1902 will exceed all previous ones.

## STOCK-RAISING AND DAIRYING.

The character of the county makes stock-raising and dairying very profitable. Abundant natural water and vegetation and extensive ranges prevail. The higher plateaus of the southeast are covered with

grasses and are devoted to stock-raising. There are many large stock ranges, and dairy farms are numerous. The annual product is over 3,500,000 pounds of butter and 900,000 pounds of cheese, most of which is shipped to San Francisco.

Poultry-raising is very successful, the fowls being able to run out all winter. Large quantities of chickens and eggs are shipped.

#### CITIES AND TOWNS.

The population of San Luis Obispo County is close to 17,000.

San Luis Obispo, the county seat, is located about 8 miles from the seaport of Port Harford, with which it is connected by rail. It is on the main line of the Southern Pacific Railroad, which gives it the benefit of a through coast route from San Francisco to Los Angeles.

Paso Robles is also a prosperous town, the resort of invalids and tourists, near which is located the celebrated hot sulphur and mud springs, which many invalids seek for their curative powers. The United States Experiment Station, consisting of 20 acres, is located there.

Templeton has now in operation a large sawmill. Several grain warehouses are located there.

Port Harford does a large shipping business. The coast steamers between San Francisco and Los Angeles all call there.

San Miguel, Arroyo Grande, and Santa Margarita are all thriving and steadily growing towns.

#### OTHER INDUSTRIES.

Off the coast considerable numbers of fish are caught. Fishing is quite an important industry, and is greatly on the increase.

Quicksilver, onyx, copper, coal, chrome iron, gold, silver, asphaltum, and petroleum are found in various parts of the county. The quicksilver mines in the Las Tablas hills are now being profitably worked and afford employment to a large number of men.

Good land all through the county can now be obtained at very reasonable prices. This county offers the most favorable opportunities to home-seekers. Lands will surely advance in price now that the Southern Pacific Railroad between San Francisco and Los Angeles, running through the entire county, is completed. Producers have also the advantage of regular lines of steamers and other vessels to carry their produce to the San Francisco and Los Angeles markets at low rates of freight.

## SAN MATEO COUNTY.

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San Mateo County is bounded on the north by San Francisco, on the east by the bay and Santa Clara County, on the south by Santa Cruz County, and on the west by the Pacific Ocean. The county is 5 miles wide where it adjoins the City and County of San Francisco. To the southward it rapidly widens, and attains a width of 20 miles in the center of the county, and much over that distance at its southerly line. Its length is 42 miles on a straight center line. Its area is 459 square miles, or 293,760 acres. It has a frontage of 65 miles on the ocean and 35 miles on the bay of San Francisco. Its frontage on the bay is a gradual slope from the foothills of the Santa Morena range to tidewater. This slope skirts the bay shore, and is flanked by the Santa Morena range, which separates it from the Pacific Ocean.

San Mateo County covers the larger part of the peninsula which bounds the bay of San Francisco on the southwest, being separated from the Golden Gate only by the city of San Francisco. Beyond the southern verge of the San Francisco hills the bay sweeps abruptly inland. Low headlands extend southerly in irregular indentations to the county line, where the bay curves gently inland, again forming a crescent at the foot of Visitacion Valley. South of this valley the hills rise abruptly to the summit of Mount San Bruno. The Coast Range, which runs through the west of the county, has at the southern line a width of fully 9 miles of broken and semi-detached ranges, and an average altitude of about 2,500 feet.

### CLIMATE.

The topography of the county governs the climate. The Santa Cruz Mountains continue their course through San Mateo County. They trend to the northwest, and at a point 14 miles from the straits through which the waters of the Pacific Ocean flow into the bay of San Francisco, they rapidly fall in height, and seem to lose themselves in the ocean. From this point to the south side of the Golden Gate the face of the ground is broken into low, rolling hills and sand dunes of variable heights. The northwest summer trade winds, accompanied by detached drifts of fog, sweep over the depression, and give San Francisco its harsh but not unhealthful summer climate.

South of the point of the peninsula the mountains rise rapidly, attaining a height of 2,500 feet above the level of the sea. This range turns the current of the sea breeze, and holds back the fog which crawls up the slope and banks itself along the summit, as though it had become entangled in the trees and shrubs which crown the crest of the range. This mountain fog bank is the condensed freshness of the sea, out of which a cool breeze flows down the easterly slope of the range to the bay shore, cooling the atmosphere without the inconvenience of the propelling winds or actual contact with the fog. In other words, the air

warmed by the morning sun rises up and checks the fog, while a cool breeze flows down the slope to replace it.

The climate is, in fact, a successful blend of the sea breeze, having a normal temperature of 55°, with the warm air of the Santa Clara Valley.

### SOILS.

The soil of San Mateo is generally a warm, sandy loam, with admixture of adobe in some places. There are about 23,000 acres of salt marsh land on the bay side.

### CULTURAL PRODUCTS.

The great interests of San Mateo are dairying and vegetable-growing for the San Francisco market. Orchards, up to within a few years ago, were confined practically to the "family orchard" for home use, but are now being set out, and fruit is grown for market, being found very profitable. At Pescadero some excellent apples are grown, also peaches, prunes, and some other fruits.

Berries are coming to the front as a good paying crop, and the acreage is being increased very materially. Owing to the nearness to market, and adaptability of soil and climatic conditions, berries are one of the best paying crops.

The olive has passed the experimental stage and been proven a paying product, and olive oil of local production has been on the market for some time and is considered equal to the best imported grade. An orchard of fifty acres is coming into bearing this year, and the acreage is being added to steadily. In the near future this will be one of the best producing and revenue-yielding crops in the county.

Cut flowers and potted plants yield a good revenue to those engaged in raising them. This county is now furnishing the major portion of cut flowers to the florists of San Francisco. Raising of flowers is not confined to greenhouses, but, owing to mildness of climate, they are successfully cultivated out of doors.

### EXPORTS DURING 1901.

#### Cereals—

Wheat .....	475 tons.
Oats .....	20,500 tons.
Barley .....	10,200 tons.
Hay .....	22,750 tons.

#### Dairy Produce—

Butter .....	400,000 lbs.
Cheese .....	670,000 lbs.
Cream .....	2,500 gals.
Milk .....	2,825,000 gals.

#### Vegetables—

Potatoes .....	3,000 tons.
Beans .....	1,000 tons.
Onions .....	100 tons.
Cauliflower .....	1,000 tons.
Green peas .....	75 tons.
Cabbage .....	15,000 tons.
Carrots .....	200 tons.
Miscellaneous (consisting of turnips, celery, table beets, green onions, lettuce, pars- nips, artichokes, green beans, sprouts, etc.) .....	750 tons.

#### Fruit—

Apples .....	19,500 boxes.
Pears .....	500 boxes.
Prunes (green) .....	300 boxes.
Miscellaneous .....	500 boxes.
Prunes (dried) .....	100 tons.
Strawberries .....	4,000 chests
Grapes (table) .....	5 tons.
Grapes (wine) .....	250 tons.
Wine .....	1,100,000 gals.

## STOCK AND DAIRYING.

A large amount of butter and cheese is manufactured in this county for the San Francisco market, and thousands of gallons of milk are daily shipped to the city. There are a number of large dairies famous for their output, where extensive experiments have been made in the grasses best adapted to the soil and giving the best results in milk. Most of the dairying and manufacture of butter and cheese is carried on in the coast section, and the products shipped to the city by sea. Creameries are in successful operation at Pescadero and Half Moon Bay, and in other portions of the county.

Stock-raising, on the grazing lands of the mountain ranges, is another profitable industry. There is practically no export of stock raised, as the packing works at South San Francisco, in the county, buy up the county's supply and is exported as a finished product.

Considerable capital is invested in the raising of high-class light harness horses and superior carriage horses.

Poultry-raising pays. Heretofore this industry has been merely an adjunct to the general farm and orchard, but the returns have been so satisfactory that poultry ranches are being started in several places in the county, and past experience and future outlook fully warrant capital being invested in this enterprise.

## TIMBER.

It is surprising to find so large a tract of virgin timber so near a large city, as exists in this county. In the extreme southwestern portion, in what is termed the Big Basin, there are estimated standing 100,000 acres of redwood of great size, rivaling, in some cases, the gigantic sequoias of the Sierra Nevada.

Oil has been discovered in paying quantities near Half Moon Bay; it is of high grade, with a paraffine base.



## SANTA BARBARA COUNTY.

Santa Barbara County lies in the angle formed by the eastward trend of the California coast from Point Concepcion. Consequently, it is bounded on the south by the waters of the Santa Barbara channel, and on the west by the waters of the Pacific Ocean; on the north is the County of San Luis Obispo, and on the east is the County of Ventura. Parallel with the southern coast, and distant from 2 to 5 miles, is the rugged range of the Santa Ynez Mountains, from 3,000 to 4,000 feet in altitude. The eastern part of the county north of this range is occupied by the San Rafael Mountains, now forming one of the Government forest reserves. The western part of the county north of the Santa Ynez is broken into several valleys, separated by ranges of hills, the larger of these valleys being Santa Maria, Los Alamos, Santa Ynez, and Lompoc. That portion of the county lying south of the Santa Ynez range and along the channel is known as the Santa Barbara Valley. The channel islands of San Miguel, Santa Rosa, Santa Cruz, and Anacapa are also included in the political division of Santa Barbara County.

### AVAILABLE ARABLE LAND.

Traversed by mountains, there must, of course, be waste land, but there is the following acreage available for practical uses:

	Acres.
Santa Maria Valley, with the valleys that open out of it and that pertain to it, and the slopes of the foothills that bound it.....	250,000
Los Alamos Valley .....	150,000
Lompoc Valley .....	230,000
Santa Ynez Valley.....	200,000
Santa Barbara Valley.....	108,000
Two islands.....	150,000
Total.....	1,088,000

The Santa Barbara Valley lies between the Santa Ynez Mountains and the sea, and has a world-wide celebrity for the fertility of its soil and the healthfulness of its climate.

The Santa Ynez Valley, situated between the Santa Ynez and San Rafael ranges, comprises about 120,000 acres of excellent arable land, mostly rolling. The Santa Ynez River runs the whole length of the valley, which is also watered by numerous creeks. The climate differs from that of Santa Barbara, being warmer in summer and cooler in winter, but the heat is dry and not oppressive, cool nights being the rule, while the winter is clear and bracing.

The Los Alamos Valley comprises about 40,000 acres of the richest of agricultural land, and as much more of excellent grazing land in the hills tributary to it. The valley is situated between two ranges of hills or low mountains, that separate the Santa Maria and Santa Ynez valleys, and about 25 miles back from the coast.

Santa Maria, the largest and northernmost valley of Santa Barbara County, lies along the river of the same name, on the boundary of San Luis Obispo County. This valley, including its upper extension, the Sisquoc, is 30 miles from the foothills to the sea; its width, including the adjacent mesa lands, is from 3 to 10 miles. Many tributary cañons break into it through the hills, mostly small, but containing rich, protected, and generally well-watered land, excellently adapted to all kinds of deciduous and citrus fruits. The main valley has perhaps as varied resources as any in the State, on account of its large extent and consequent differences in climate and soil. On the west it opens to the sea, and has a heavier soil and more fog. The soil of the middle valley is a sandy loam, while that of the Sisquoc and the tributary cañons is deeper and richer. The lower and northern valley, especially the Oso Flaco side, grows large crops of beans, potatoes, etc., while farther up wheat and barley are yet grown. The beet-sugar industry is now assuming large importance in this valley, a sugar plant, costing \$1,000,000, having been built in 1898, and employing 500 hands in the sugar-making season. In 1901 over 90,000 tons of sugar-beets were produced, making 100,000 sacks of granulated sugar, the only product marketed.

#### LOMPOC AND VICINITY.

Lompoc is the center of a very fertile farming and dairying section. It has a population of 1,500, a bank with \$145,000 in deposits, a fine high school building, and a grammar school building costing \$15,000; is on a branch of the Southern Pacific, 9 miles from the main line at the ocean, and is an up-to-date town in every particular. The town owns its water-supply, maintains a fire department, and has well-graded streets. There are two weekly newspapers published in the town, and two good hotels provide for the traveling public. The section tributary to Lompoc is very well adapted to dairying, and the people of that neighborhood are justly proud of their creamery, the product of which is the most popular butter made in this section of the State, and is as fine as is produced anywhere. Lompoc seems the natural home of the apple, and its product has taken the first prize at the great fair at New Orleans, and at Chicago was awarded a diploma of excellence. The codling moth is here unknown, and Lompoc apples are never "wormy," so there is every prospect that this industry will eventually become of the first importance, especially as the demand for Lompoc apples always outruns the supply. Another production of which Lompoc has a monopoly for the United States is English mustard, which is here grown on a large scale.

#### CLIMATE.

Few portions of the world, if any, can show such a remarkable climatic record as the city of Santa Barbara and the contiguous valley. The following table, showing the average highest, lowest, and mean temperatures, relative humidity, rainfall, and average movement of the wind, is compiled from records carefully kept at the city of Santa Barbara by that accurate observer and mathematician, Mr. Hugh D. Vail, in his lifetime, and since his death in June, 1900, by James A. Dodge, Professor of Mathematics in the Santa Barbara High School. With the exception

of the wind movement, the observations of which extend over a period of twelve years, the record covers a period of a third of a century, and may be regarded as fairly typical for all time:

Month.	Average of Highest Temperature	Average of Lowest Temperature	Mean Temperature	Relative Humidity	Average Rainfall	Average Hourly Movement of Wind
				Per cent.	Inches.	Miles.
January	74.8°	37.1°	53.5°	67	3.73	3.5
February	78.2	36.1	54.8	69	3.21	4.0
March	79.8	38.3	55.7	70	2.28	4.5
April	82.0	40.8	58.0	71	1.18	4.6
May	82.2	44.5	59.3	73	.36	4.5
June	85.4	47.9	62.5	74	.10	5.0
July	86.7	52.3	65.2	76	.02	4.2
August	87.0	53.5	66.7	75	.00	4.0
September	88.2	50.5	66.0	75	.22	3.6
October	87.9	47.3	62.6	72	.73	3.5
November	84.0	43.2	60.0	66	1.54	3.1
December	77.1	38.6	55.7	65	3.63	3.5
Means	82.7	44.1	60.0	71	17.00	4.0

The record for the year 1901 shows the mean temperature to have been 59.7°, being .3° below the normal. The highest temperature recorded was 96°, and but for one day only. The next highest was 90°, and that for one day only. The thermometer registered above 80° on but twenty days during the year, distributed as follows: February, 2; March, 2; May, 1; June, 3; July, 1; August, 5; September, 1; October, 3; and November, 2. The lowest temperature was 35°, and the thermometer registered below 40° on fourteen nights only. The warmest night during the year showed a temperature of but 63°. During the year there were 150 clear days, 147 fair days, and 68 cloudy days. There was a great deal more cloudy weather than usual, the average of clear days, taking one year with another, being about 240. The rainfall for the year was 15.27 inches, being 1.73 inches below the average. The average hourly movement of the wind was 3.5 miles per hour. The greatest movement on any one day was 275 miles, on the 22d of March, or an average for that day of about 11 miles per hour.

#### PRODUCTS OF THE SOIL.

The arable soils of Santa Barbara County are mostly alluvial and adobe. The alluvial soil is generally deep and rich, and will grow all kinds of field crops, such as beans, potatoes, corn, and vegetables of all kinds, strawberries and all other kinds of small fruits. In addition to the fruits usually grown in the Eastern States, this soil will produce prunes, figs, olives, peanuts, English walnuts, grapes, plums, lemons, limes, oranges, loquats, guavas, persimmons, cherimoyers, dates, bananas, and many other semi-tropical fruits. In fact, nearly every tree, shrub, or plant that grows in the world can be grown out of doors in the southern part of Santa Barbara County.

The adobe soil is very rich, but more difficult to work. It, however, produces large crops of oats, wheat, barley, flax, and mustard, and affords also the richest of pasturage.

The principal crops of Santa Barbara County are hay, barley, wheat, English mustard, apples, olives, lemons, walnuts, beans, and sugar-beets. The principal mineral productions are asphaltum and petroleum.

A large portion of the county, especially that of a hilly or broken character, is devoted to stock-raising, which is as yet the principal industry. During 1901, there were shipped out of the county, 22,000 head of cattle, 7,000 cows, 2,500 calves, 4,500 hogs, 65,000 sheep, 5,000 horses, and 1,500 mules.

The following figures for the agricultural products of 1901 and also the horticultural output would indicate that Santa Barbara County is entitled to credit for something more than climate:

Barley .....	540,000 sacks.
Wheat .....	300,000 sacks.
Oats .....	134,000 sacks.
Hay .....	60,000 tons.
Beans, Lima .....	12,600 sacks.
Beans, Navy .....	200,000 sacks.
English Mustard .....	6,000,000 pounds.
Olive Oil .....	36,000 bottles.
Walnuts .....	1,000 tons.
Sugar .....	100,000 sacks.
Lemons and Oranges .....	\$300,000 worth.

The many other products of the county bring the total output for the year to about \$6,000,000.

#### INDUSTRIAL IMPROVEMENTS.

The completion of the coast line of the Southern Pacific through the county has given a great impetus to every branch of industry. The oil development in the northern part of the county has been a marked feature of the year, and there is every prospect that this county will soon become one of the largest producers of petroleum in the State.

There has been of late a very decided improvement in the industrial outlook for the county. In the city of Santa Barbara alone, improvements in the shape of buildings and street railway extension aggregate about \$800,000. The Pacific Improvement Company is perfecting a system of water works for its suburban tract, the Hope ranch, which will cost, when completed, about a quarter of a million dollars. Lompoc has voted \$40,000 for bringing water into that valley, and Santa Maria has spent \$10,000 toward an irrigating plant.

The population of the county is something over 20,000. That of Santa Barbara City between 7,000 and 8,000.

Among the improvements for the near future is a hotel to cost something over \$500,000, ground for which was broken on January 19, 1902. It will be located on Burton Mound in the city of Santa Barbara, and will be unsurpassed by any hostelry in the State. It will supply the long-felt need of the city for a modern and capacious tourist hotel.

#### PRICES OF LANDS.

The cost of farming lands in this county remains about the same as for several years past, though an improvement is manifest in some sections. Good land in the Santa Maria Valley is worth from \$50 to \$75 per acre, unimproved, while such land in the Lompoc Valley

brings from \$75 to \$100 per acre. There are sections of the county where land may be purchased at a cheaper rate, but it is not so conveniently located as regards railroad and shipping facilities. Grazing lands may be bought for \$10 per acre upward. Land in the vicinity of the city of Santa Barbara is worth from \$200 to \$300 per acre, unimproved. Sometimes a choice residence property is sold for much higher figures, but these prices represent a fair average for Goleta and Carpinteria valley lands, and these are among the richest in the county. The outlook for small fruits and vegetables in the vicinity of Santa Barbara is having the effect of creating a demand for small holdings, and there is a marked increase in the values of such property. The expected increase in the city's population will tend to produce this effect as the demand for the city market broadens.

## SANTA CLARA COUNTY.

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Santa Clara County has an area of 1,750 square miles—1,120,000 acres. It is surrounded by Alameda County on the north, Stanislaus and Merced on the east, San Benito on the south, and San Mateo and Santa Cruz counties on the west. The county is near the geographical center of California, and immediately south of San Francisco.

### TOPOGRAPHY.

Its eastern boundary is the summit of the Coast Range, and its western the crest of the Santa Cruz Mountains. It extends southward 52 miles and has an average width of 34 miles. Its principal valley is the Santa Clara, which is 34 miles broad at the north and has an average width of 15 miles. Encircling the level lands of the valley is a wide region of rolling hills, beyond which rise the mountains, culminating at the western side in Mount Bache, 3,780 feet, and on the east in Mount Hamilton, 4,250 feet. Of the total area of the county it is estimated that 800,000 acres are suitable for the cultivation of fruits and vines; of these something more than 250,000 acres are in the valley and 300,000 acres in the foothills.

Looking down the valley from some elevated point in the surrounding hills, the general contour presented is that of a level plain, while it is, in fact, a series of gentle undulations, with marked variations in the character of the soil. In what is now, or recently has been, the lower portion of this plain, the soil is a black, tenacious clay known as "adobe." While very fertile and productive, it requires much care as to the time and manner of cultivating it, and is well adapted to hay and grain. The higher lands of the valley are a light, loamy, and sometimes gravelly soil. This is easily cultivated, and is adapted to all kinds of cereals and most varieties of fruits.

The "warm belt" is a tract upon the slopes of the hills which environ the valley. It has an altitude of from 600 to 2,000 feet. It is generally, and in some localities wholly, free from frost. In this belt, to the east of Milpitas, potatoes, peas, tomatoes, asparagus, strawberries, etc., are grown through the whole winter for the San Francisco market.

### SOILS.

Upon the Los Gatos and Guadalupe rivers, in the immediate vicinity of San José, are some hundreds of acres, formerly dense willow thickets, but now in the highest state of cultivation. These lands, which are known by the general name of "The Willows," are regarded as the most desirable in the valley, and abound with lovely homes surrounded by splendid orchards. The soil is a sedimentary deposit, easily cultivated, requiring but little irrigation, and producing every variety of fruit and vegetable common to California.

In the southern portion of the valley the soil is especially productive. Over a considerable portion the subterranean moisture maintains the growing pastures throughout the year, and some of the most successful dairies in the State are established there. The more elevated portions of this part of the valley are well adapted to fruit and vines.

So wide is the divergency in the character of the soil in different localities, that agriculturists are reluctant to express an opinion as to comparative merits, each section having demonstrated its fitness for growing some of the almost endless varieties of fruits and vines, which are here cultivated at almost fabulous profits. While there is no better soil in the world for the production of wheat and barley, the area devoted to the cultivation of these cereals is yearly decreasing, owing to the much greater remuneration obtainable from the growing of fruits, grapes, berries, and vegetables.

Alviso district has rich black loams, so highly prized for small fruits and vegetables, and the San José and Santa Clara regions have lighter loams and sedimentary deposits, valued for stone fruits. The shallower gravelly loams of the hillsides are also very desirable. Along the streams the land is deep, well drained, and very rich in desirable elements. Red chemisal and chaparral land on the hillsides of Santa Clara Valley has recently been put in fruit. Although reddish brown when dry, and inclined to form hard lumps, its supply of potash, lime, and humus is such as to promise very well under good cultivation.

The higher lands are of light loam, and in some places gravelly. They are composed of a black, tenacious, and wonderfully fertile clay loam. Along the banks of the streams the soil is of great depth and richness, while on the borders of the bay are thousands of acres of salt marsh, which, when reclaimed, is found to be the most productive.

There are many small farms, and diversified farming is the rule.

#### WATER-SUPPLY.

The valley is drained by a number of streams, the principal ones being the Los Gatos, Guadalupe, and Coyote rivers. In summer time these watercourses greatly diminish, and the smaller ones wholly disappear. Having their sources in the surrounding hills, and sinking as they approach the valley, they augment the subterranean resources which supply the artesian wells. These are found all over the valley. They are usually from 60 to 100 feet in depth, though some find a larger and more permanent supply at a much greater depth. In the country the water is raised by windmills into tanks, furnishing an ample supply for household and gardening purposes, while the cities and larger towns are provided with reservoirs and complete waterworks systems.

#### CLIMATE.

The mountain ranges which surround the Santa Clara Valley very materially modify the climate, shutting off, to a great extent, the fogs which prevail on the immediate coast, and the hot winds from the San Joaquin Valley on the east. There is a so-called winter and summer, but the roses bloom in gardens through both of these seasons with an equal beauty. It has a wet season and a dry season, the former a succession of showery days, alternating with days of fair weather and

brilliant sunshine. The dry season is not so dry as to blight the foliage of such trees and shrubs as require moisture for their subsistence.

The tops of the surrounding mountains are whitened with snow every winter, but the winds come into the valley from the north, and not from the mountains, so that these snowy ridges do not chill the air. Since the advent of the white man into the valley, snow has fallen but twice, and then melted on the same day. The temperature varies from 50° in the wet season to 80° in the dry. On rare occasions the thermometer may show a little higher temperature during the warm months. The summer is as free from heat as the winter is from cold. The self-same breeze from the bay that cools the air in summer warms it in winter, drawing its own temperature from the unchanging ocean.

Along the slopes of the mountains on either side of the valley, at an elevation ranging from 660 to 2,000 feet, exists a region known as the thermal, or warm, belt. When there is a heavy frost in the valley below during the night, there is no sign of frost on these elevated tracts of land. This anomalous distribution of heat is explained by the fact that during the day the lower stratum of air in the valley becomes heated and gradually rises up en masse, its place being supplied by the cold air flowing in from the north, near the surface of the ground, that has been cooled by radiation during the long winter nights. Orange trees planted in these thermal belts, at an elevation of more than 2,000 feet, suffer little from the ravages of frost.

The rainy season lasts from October to April. In the latter part of September the signs of a coming change are apparent. The winds, which have hitherto come from the north, now become variable both as to direction and force, or perhaps wholly cease. The stillness of the night is broken by fitful gusts which, while wailing through the trees, are the precursors of the coming winter. In the first ten days of October about an inch of rain will fall, followed by weeks of the finest weather.

The effect of these first rains is magical. It washes the dust from the foliage, and the earth puts on the freshness of spring. While in the East the year is gently dying, here a new year is apparently springing into existence. If in this and the succeeding months there are further showers, the grass springs up on every hand, the hills change their subdued coloring for a lively green, and wild flowers appear in every sheltered nook. The flowers supposed to be coincident with spring bloom in the gardens, and the perfume of the violet scents the air. It is not until the end of November or the beginning of December that the rainy season is fully established. A coming storm is now heralded by a strong, steady wind, blowing for a day or two from the southeast, followed by several days of rain, and these succeeded by days and even weeks without a cloud. And so, for six months from the time of the first showers, occasional storms alternate with periods of fair weather. The amount of rain which falls during the winter varies with the locality, from 15 to 35 inches being a fair estimate throughout the valley. Taking an average of a series of years, it appears that of the 182 days which comprise the rainy season, on 43 days in each year more or less rain fell; 69 days were cloudy; the balance bright and pleasant. Thunder storms are practically unknown, the low rumbling being only occasionally heard on the mountains many miles distant. Severe wind storms and cyclones, so common in some of the interior



States, are wholly unknown here, and as before stated, snow has but twice fallen since the advent of the white man.

With the month of March the rains are practically over, though agriculturists expect and hope for showers in April. May has perhaps a few showers during the first ten days, which interfere with the harvesting of the first hay crop, and then the dry or summer season is in full swing. By July the surface moisture has been taken up and dissipated, and the growth dependent upon it ceases. The nutritious grasses have ripened, and self-cured and dried are the food of cattle and sheep. The waving fields of golden grain await the reaper.

### THE LEADING INDUSTRIES.

Santa Clara is preëminently the horticultural county of the State. Every variety of fruit grown in California is produced here, but the chief of all the horticultural pursuits of the county is prune-growing. Of the prune crop of California, Santa Clara County produces nearly two thirds. With improved facilities for marketing, this industry has, within the last ten years, assumed marvelous proportions. The largest fruit canneries in the world are operated at San José, the leading city of the county.

Olive-growing is assuming prominent proportions, and it is only a question of a few years when it will become one of the leading industries of the county.

Almond culture is extensively followed in the county, and the nut grows to perfection in both size and flavor.

Pears do exceedingly well and grow in any part of the county; large quantities are shipped to Eastern points, and a considerable portion of the crop is either canned or dried.

Apples, especially those raised in the foothills or on the mountain sides, are of a very superior flavor and size.

Apricots of all varieties are grown and reach a very high standard of quality. The bulk of the crop is mostly canned or dried, but a large quantity is shipped green, and, next to prunes, it is the largest fruit industry.

The peach is cultivated on a large scale. A large quantity of the crop is either canned or dried, although a considerable portion of the crop is shipped green. Santa Clara peaches find a ready sale in the East, on account of their excellent flavor and large size.

Cherries of all varieties grow in profusion. The cherry is one of the best shipping fruits in the county, and is very profitable to growers thereof.

While the culture of citrus fruits is not as extensively carried on as it might be, those grown in the county compare favorably, as to flavor and size, with those grown anywhere in the State.

Grapes flourish, particularly the wine varieties, and many new vineyards have recently been planted. The outlook for this industry is particularly bright, and the product of the vineyards finds a ready sale to the numerous wineries throughout the county.

Berries of every description are grown, and the crop is a very prolific one.

Vegetable farming is increasing every year and great quantities of all kinds are shipped to the San Francisco market. Asparagus in particu-

lar is one of the most profitable vegetables grown; many tons are shipped green, and several hundred tons are canned especially for the Eastern market.

The raising of seed, both flower and vegetable, is on a very extensive scale in this county, and large quantities are shipped to all parts of the world.

The dairy interest is very extensive. The butter and cheese yield is of a high standard and the product of the county is known to be of a very superior quality. There are several up-to-date creameries in operation throughout the county.

Poultry-raising, in all its branches, receives considerable attention, and it is a very profitable industry. Some of the finest chicken yards, stocked with the choicest birds to be found in the State, are located in the county.

The raising and feeding of cattle for market is not, owing to the increased value of land, carried on as extensively as in former years. Natural grasses are to be found on the remaining ranges, and very nutritious pasturage can be obtained the year round.

#### PRINCIPAL TOWNS.

San José is the county seat; it has the finest educational establishments of any city in the State.

Palo Alto is a rapidly growing town. The Leland Stanford Junior University is located there.

Gilroy, Santa Clara, Mayfield, Los Gatos, and Saratoga are all prosperous, as are many other smaller towns throughout the county.

The last report of the United States General Land Office gives the acre of unoccupied government land as over 30,000 acres, chiefly mountainous.

## SANTA CRUZ COUNTY.

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Santa Cruz County fronts its entire length on the Pacific Ocean, and lies midway between Oregon on the north and Lower California on the south, and is in the heart of Central California. Its boundaries, besides the ocean on the west, are San Mateo on the north, Santa Clara on the east, and Monterey on the south. It is separated from San Mateo and Santa Clara counties by the Santa Cruz Mountains, and from Monterey by the Pajaro River. It has an area of 437 square miles, or 280,000 acres.

It is one of the smallest counties in the State, and comprises a narrow strip of mountainous land about 40 miles long and 18 broad, forming a vast amphitheater, and sloping from the summits of the Santa Cruz range, whose highest elevation, Loma Prieta, is 4,000 feet, southward and westward to the bay of Monterey.

### TOPOGRAPHY.

The curving line of shore and the corresponding curve of the mountain line inclose an irregularly crescent-shaped tract of country, with an average width of 20 miles, which for grandeur, beauty, and variety of scenery equals any tract of similar size in the world.

The innumerable ridges and spurs of the Santa Cruz range are intersected and furrowed by gorges, cañons, and narrow valleys, trending for the most part seaward. The sides of these are closely set with forests of pine, redwood, madrone, and other trees, the redwoods having, in many cases, attained gigantic growth. A number of streams rise in these hills, and bring down with them the rich alluvial loam into the valleys, which, in their normal condition, are smiling with native grasses and flowers, and as soon as "tickled with a hoe" yield phenomenal agricultural results. These streams are, agriculturally as well as topographically, a very important feature of the county, watering as they do every section of land. Besides these larger streams, springs of water are almost innumerable.

Nearing the coast there are many interesting topographical features. The leagues of wide, high, wind-swept grassy plateaus which form our remarkable grazing and dairy lands; the succession of chalk terraces; the broad amphitheatrical valley of the Pajaro; the salt lagunas, picturesque in configuration, and surrounded by park-like groves of live oaks; the high sandstone cliffs along the shore; the magnificent ocean drives—all material for pleasant investigation.

### SOILS.

Along the coast-line (except in the northwestern corner of the county, at which point the mountains come down nearly to the water's edge) a series of raised beaches form a strip of more elevated land along the seashore. This widens to the south of the city of Santa Cruz, and affords

a large area of fruitful soil, which has been brought into a high state of cultivation.

From Santa Cruz city southward the soil consists of a light loam, abounding in lime, potash, and phosphoric acid. In the Pajaro Valley a great variety of soil is found, from the rich sedimentary alluvial wash to the light sandy soil of the foothills. In the lower part of the valley a clayey loam predominates. This is followed by a heavy adobe higher up, and then the dark, reddish loam of the plains. The latter is the favorite with fruit-growers, and it is here that the best orchards are found.

#### RAINFALL.

The average annual rainfall of Santa Cruz, taken from a record of thirty-two consecutive years, is 25.26 inches, showing that this is a well-watered district as compared with the State of New York which has an annual rainfall of 19.04 inches.

#### THE COUNTY'S VARIED INDUSTRIES.

The specialty of Santa Cruz is her infinite variety. In lumber products she ranks third in the State. Her butter, cheese, and cream might well win her a place in the dairy districts. Hay, grain, potatoes, and the whole range of cereals and vegetables give enormous yields per acre, and while she does not claim to wear the citrus belt, yet oranges are raised for home consumption, and the cultivation of the lemon for market is a successful and profitable business, since the immunity from frosts and equable seasons favor its arriving at fine maturity. But her deciduous fruits, large and small, her table and wine grapes, her fine wines are winning renown the world over. From the summits of the range, more than 2,000 feet above the sea, down to the wide and fruitful valleys along the bay coast, grow and flourish a range of the most delicious fruits which no spot on earth of similar size may successfully rival. Prunes, pears, apricots, lemons, peaches, cherries, Japan and native plums, figs, walnuts, persimmons, olives, and nectarines thrive, but the crop in which the largest profit is found is undoubtedly that of apples. The quality and size are astonishing, and the yield per acre as much so. From Bellflowers in September to Newtown Pippins in December the supply is steady, and the work of harvesting and shipping drives the orchardist merrily. From two depots in the county, in a late season, there were shipped to Eastern points, exclusive of other sales, 128,596 boxes of apples, weighing 6,429,800 pounds. The market for Santa Cruz County apples now extends to England and the Continent, Germany being a large buyer. The acreage now in bearing will supply not less than 2,000,000 boxes annually. The especial home of the apple, as well as of the strawberry, in this county, is the fertile valley of the Pajaro River, and the flavor and color of the foothill apples are renowned also.

Of the small fruits, the strawberry is most widely grown, and furnishes a practically continuous crop. Raspberries, blackberries, Japanese wine-berries, and the Loganberry, which originated in Santa Cruz, yield unfailing crops. The Loganberry is a cross between the wild blackberry and the Antwerp raspberry, and fruits in two varieties, red and black. The berry is large and luscious, and is now being grown widely in the Eastern-Southern States as well as in California.

The wines of this county are winning the place they deserve in the markets of the world. This product of our vineyards is now shipped to the heart of the wine countries of Europe. Our white wines go to the Rhine, our red wines to Bordeaux. The Ben Lomond wines of Santa Cruz County were exhibited and won gold medals at the World's Exposition in Paris, at the Columbian Exposition in Chicago, at competitive exhibits in Bordeaux, and at the San Francisco Midwinter Fair. The Santa Cruz wine trade with China and Japan is also good and growing.

The sugar-beet industry is a profitable one. A large acreage in the southern part of the county is devoted to the growth of the beets, and a well-equipped factory reduces them to sugar.

Santa Cruz ships thousands of tons of hay and many train-loads of potatoes annually. Potatoes yield phenomenally in the rich bottom lands; asparagus is grown for outside markets; hops and beans are each good enough in results for farmers to give them special attention.

Market gardening is profitable, and many comparatively small industries are making an honest living for those who follow them. Among these are cucumber-growing for San Francisco and Eastern cities; seeds, bulbs, and cut flowers for metropolitan markets.

Dairying is a flourishing and profitable interest in Santa Cruz, and the fifty thousand and more acres of grazing lands have for many years supported herds of well-selected stock. The grasses are rich and the county's products of cream, milk, butter, and cheese have a good repute at home and abroad.

A typical dairy and creamery farm lies just north of the city of Santa Cruz. It comprises 2,330 acres, rolling up from the ocean rim, and well watered by mountain streams. The principal of these furnishes power that generates electricity, and it is probable that there are few creameries in the United States where the electric current is harnessed down to so many and such varied duties. Only about 500 cows are kept, but they are of the choicest. Many other dairies graze herds of from 300 to 500 cows, and make both cheese and butter.

The poultry interest needs fostering all over California. The large importations of eggs and fowls from Eastern districts are especially discreditable, in view of the fact that there is no winter weather from which to defend the poultry, while every condition is favorable to the profit and the prosperity of the industry. While Santa Cruz produces and ships many eggs, and while they are of so good a keeping quality that they are in special demand for exportation to the Orient, yet the business might easily be increased many hundred per cent, especially as not enough chickens and turkeys are raised to supply the home market. The wholesale dealers of San Francisco do not hesitate to express their preference for Santa Cruz County eggs over those from the drier and hotter counties of the interior, their keeping qualities being far superior.

The deep-sea fisheries of Santa Cruz are important factors in her prosperity, and here again there is room for indefinite expansion. The waters of the bay teem with food fish; the pools and rocks along the shore support quantities of shellfish; and the streams that come down to ocean and bay are the homes of the mountain trout.

Many industries have developed to the profit-producing point, and the general air of thrift and prosperity throughout the county is satisfactory. From what has been already said it will be evident that one

vast source of wealth of the county, past, present, and prospective, is its forests. Redwood lumber is durable, non-inflammable, and capable of receiving a rich finish for interior and cabinet work. The output of the county has been large for many years, but large tracts of forest remain, and the redwood is rapidly reproductive, giving promise that the supply for the future shall be continuous. There are fifteen lumber mills in active operation in the county. Many of the trees are giants of ancient growth, and it is not uncommon to see thirty-five thousand feet of clear lumber cut from a single tree. The by-products of shakes, shingles, railroad ties, piles, telegraph poles, fruit-box shooks, pickets, posts, etc., are manufactured in large quantities.

Eight varieties of oak grow here, among them the chestnut oak, which supplies tanbark for the making of superior leather. The manufacture of powder, besides requiring redwood and oak for fuel, utilizes willow, alder, and madrone. Redwood, laurel, and madrone are all practically used as cabinet woods, and this industry is susceptible of an indefinite development, so numerous and varied are the native woods of the county.

Naturally, wood is the fuel in general use, and it is of the best quality and cheaper in Santa Cruz than in any Central California county. Especially interesting to lovers of trees are two localities within easy reach of Santa Cruz. The "Big Tree Grove" is but five miles from town, on the line of the railway in the fine cañon of the San Lorenzo. This is an ancient grove of giants, not the *Sequoia gigantea* of the Sierras, but the *Sequoia sempervirens*. It covers twenty acres, and numbers scores of trees from ten to twenty feet in diameter, and a dozen or more which exceed that diameter and reach a height of three hundred feet.

In the mountains lying near the coast there were discovered years ago deposits of a material, unique and strange in substance, which, under the name of bituminous rock, has proved of untold value as a natural pavement material. It has now been used on the streets and sidewalks of Santa Cruz and other places for sixteen years, and when laid on a proper foundation, proves durable, clean, elastic, and as nearly perfect as possible. It appears to be a natural combination of bitumen, sand, and crude petroleum. It is now shipped to all near-by cities, and goes farther afield to Salt Lake City, Tacoma, Seattle, Phoenix, Ariz., and to Honolulu. A recent shipment of one thousand tons to Honolulu was to fill a government contract made after close examination and investigation by government experts. The industry, already flourishing satisfactorily, will find no limit to its activity in a century to come, so far as the supply is concerned.

Very similar conditions exist regarding the vast deposits of high-grade lime rock throughout the mountains. Five kilns are in active operation, the employes and their families, like those of the lumber mills, constituting populous little settlements, and many cargoes per month are shipped to distant points.

#### PRINCIPAL TOWNS.

Santa Cruz is the county seat, with a population of over 8,000.

Watsonville has a population of 4,000, and is one of the chief shipping points; last season there were over 2,000 carloads of apples shipped.

Other growing towns with fine educational facilities and thriving surroundings are: Soquel, Aptos, Felton, and Glenwood.

## SHASTA COUNTY.

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Shasta County is situated at the head of the Sacramento Valley, between parallels of latitude  $40^{\circ} 20'$  and  $40^{\circ} 15'$  north, and longitude  $120^{\circ} 20'$  and  $123^{\circ}$  west. It is bounded on the north by the counties of Siskiyou and Modoc, on the east by Lassen, on the south by Tehama, and on the west by Trinity. Its greatest length from east to west is 90 miles, and its greatest breadth from north to south is 60 miles. Its area is 3,765 square miles, or 2,409,600 acres.

### TOPOGRAPHY.

The mountains of the Sierra Nevada and Coast Range cover a large portion of the county on all sides except the south. They are rugged and lofty, rising more than 5,000 feet above the sea. On the east there are four peaks of special prominence, that stretch far into the county from the Sierra, separated from each other by a space of from 10 to 12 miles. Lassen Peak has an altitude of 10,577 feet, and is timbered for two thirds of the way up; the others are bald, and usually covered with snow. Other peaks and buttes are numerous, and all indicate volcanic origin, as shown by extinct craters, cones, sulphur deposits, beds of lava, etc. Hot and boiling springs are also of frequent occurrence.

In the southern portion of the county is a foothill region, half circular in shape, forming the northern end of the Sacramento Valley proper, and embracing about 500,000 acres, the altitude of which is from 500 to 2,500 feet above the level of the sea. The southwestern portion of this foothill region is a succession of rounded hills, varying in height from 50 to 200 feet above the level of the sea. The central and southern portions consist of table-lands, varying in altitude from 500 to 700 feet above sea-level. It has many narrow valleys. From this section eastward there is a gradual ascent to the mountains, embracing the higher foothills of the Sierra.

### WATER-SUPPLY.

Shasta is noted for the number and beauty of its streams. First in importance is the Sacramento River, flowing through the county north and south; all but 20 miles of its course in the county is through a rocky cañon. The McCloud River, bursting from Mount Shasta's side, rushes through the mountains of the north in a southerly direction and empties into the Pitt River. The most beautiful stream of the northeast is Fall River. In its meanderings it is 40 miles in length, and empties into Pitt River. Besides these larger streams there are a score of tributaries or creeks, while springs abound in the foothills and mountains. Among the minor streams are Hat Creek, Roaring River, Hatchet Creek, Montgomery Creek, and on the north, Squaw Creek, McCloud River, and the Little Sacramento. These three have many features in common. They take their rise in the highest mountains

around Mount Shasta, flow south, are clear, very cold, and very rapid, each about 100 miles in length, and fall into the Pitt River within a distance of 15 miles. Below this point comes Clear Creek from the west, Churn Creek, Stillwater Creek, Cow Creek, and Butte Creek from the east, the last forming the boundary between Shasta and Tehama counties on the east, as Cottonwood Creek does on the west. Cow Creek is a large creek, having many branches, all rising in the high Sierra. Battle Creek receives the waters from the west side of Lassen Butte, as does Hat Creek on the east side. These two creeks have sources close together; each is from 30 to 40 miles in length. The former empties into the Sacramento River, the latter falls into Pitt River 80 miles above, at an elevation of 2,500 feet. Besides these streams there are a great many others of smaller size. Numerous springs are found, and water in abundance for all needs exists.

### SOILS.

The soil of the valleys is an alluvium, a rich sedimentary deposit, largely intermixed with disintegrated rock, and in some parts with a mixture of gravel. The usual color is a light red or reddish brown. The soil is very fertile, and is found excellent for plums, prunes, pears, figs, and small fruits. The mesa lands bordering the valleys are, as a rule, composed of a sandy loam, with a large percentage of clay, and carrying in many portions, especially in the higher parts, considerable gravel and bowlders. Fruit of nearly all kinds does well on these mesa lands. On the foothills is found a red loam or clay, very productive, and excellently adapted to the growth of berries. On the elevated plateaus of the north and northwest the soil varies from a black, sandy loam to a red loam or clay, while to the southwest the soil is generally adobe, found very productive of grain and rich in natural grasses.

### CLIMATE.

Almost any desired climate may be found, from the semi-tropical to that in which the cold winter and short summer prevail. The rainy season, which begins in September, is the most delightful part of the year. It is perfectly clear and warm between rains. In the higher altitudes the climate varies. Snow storms are frequent, but not heavy or of long duration. The ground never freezes more than an inch or two in depth. The foothills have an excellent climate, neither an extreme of heat nor of cold. In the valleys in the east and northeast portions of the county the seasons—summer and winter—are similar to those of the Eastern States, only less in the extremes of heat and cold, the same as anywhere else in the interior portions of the State, there being only from 2° to 4° difference in extremes of temperature here and at the extreme south end of the San Joaquin Valley at Bakersfield. Weather is delightful in March, April, May, June, September, October, and November; hot in July and August; rainy in December, January, and February.

Irrigation is unnecessary for most crops in many portions of this county, as the rainfall is sufficient for all ordinary purposes. The rainy season begins, as a rule, in September, never later than October, and extends, at intervals of two or three weeks, from that time until the



middle of the following June. During the entire time the ground is thoroughly saturated with moisture. This rainy period covers the whole of the growing season in California. At the end of the rainy season grains, grasses, etc., are ready for the harvest, and fruits, grapes, etc., are beginning to ripen. Now follows the dry season, embracing the months of July, August, and September. Under a cloudless sky crops are harvested and stored away, and fruits mature and acquire the delicious flavor for which they are noted. The dry season is just as much of a necessity as the wet, for only under these conditions can perfect grain and fruit be grown.

#### SHASTA'S NATURAL RESOURCES.

Beautiful resorts and health-giving springs abound in all parts of the county. The high mountains are generally heavily timbered with sugar pine, cedar, fir, and other valuable timbers. Some large valleys and extensive plateaus are found, however, and are mostly devoted to general farming, stock-raising, and wool-growing, the climate being similar to that in the East, only much less severe. The foothills, varying in altitude from 800 to 2,000 feet above sea-level, are more or less timbered with oak and pine, and their higher portions yield all kinds of minerals and stone, such as gold, silver, copper, iron, platinum, quick-silver, lead, marble, sandstone, limestone, coal, onyx, etc., affording also many opportunities for lovely homes to the small farmer, fruit-grower, stock-raiser, poultryman, and gardener. Water is abundant and of excellent quality, coming from springs and small creeks. The climate of this section is perhaps the most pleasant of any, and is not extremely hot in summer nor very cold in the winter or rainy season. The valleys are very fertile and capable of producing all products grown in the temperate or semi-tropical regions.

An industry that promises to develop to a great extent in the future is the culture of the apple. At certain altitudes, crisp and luscious apples are produced, and the quantity and quality can not be surpassed. Good profits reward the apple-grower, and at no distant day the present moderate acreage devoted to the cultivation of the apple will be largely augmented.

Truly it may be said of Shasta that it has passed the experimental stage. Its orchards are a success, producing heavy crops of all kinds of fruit and of the very best quality. The prune, peach, pear, plum, apple, apricot, almond, fig, lemon, orange, and olive thrive, if care is used in the selection of land and location, with reference to the fruit desired to be grown. Large bearing orchards are scattered all over the county, but the continuous ones are found along the river from Cottonwood to and above Anderson; in Happy Valley, 12 miles southwest of Redding; in Churn Creek bottom, 6 miles southeast of Redding; on Stillwater, 6 miles east, and about Millville. Grapes of wine, table, and raisin varieties have proven a success in all the valley portions of the county, and many gallons of wine are made and shipped to different parts of the country; so with raisins. Wheat, grass, and alfalfa are grown everywhere successfully, water being needed for alfalfa. The markets are the best in the State, as there is home consumption for everything produced except fruit, and hundreds of carloads in addition to the products raised here are shipped in annually, consisting mostly of

grain, hay, butter, eggs, and vegetables. The producer here receives for his products the prices paid at Marysville, Sacramento, and other shipping points, freight and commission added from there here. The homeseeker will find land here adapted to grain-growing, hay-making, poultry-raising, or gardening at less prices than in the older settled portions of the State, prices ranging from \$25 to \$100 per acre for good land, according to location.

Stock-raising is an important factor in the material wealth of Shasta County. The mild winters in the lower altitude obviate the necessity of feeding, while the summer ranges afforded by the mountains make it possible for the stock-raiser to keep his herd upon green feed the greater portion of the year. As a whole, the varied agricultural interests of Shasta County are in a prosperous condition.

The sawmills of the county are an important factor in its industries, and distribute many thousands of dollars annually for labor. The Terry Lumber Company's mills are located on the mountains above Montgomery Creek, and are the largest in the county at present; are connected with Bella Vista by flume; here they have planing mills, yards and dryhouses, and a railway to the main line at Anderson. The wood camp is located in the big bend of the Pitt, and has been sending from 50,000 to 80,000 cords of wood annually down the Pitt to the smelters. They also own and operate a sawmill, and cut from 12,000,000 to 15,000,000 feet of lumber each year.

In the Shingletown country there are seven large sawmills, and during the last year they graded about twenty-five miles of road for traction-engine work, and over this road, with two engines, they transport their lumber to the market on the railroad. At or near Whitmore there are some sawmills which turn out from 20,000 to 30,000 feet of lumber per day, which they freight to the railroad by wagon.

There are three large flouring-mills in the county—one at Ball's Ferry, one at Falls City, and one at Swasey.

The resorts are numerous and mostly easy of access. Near Castella, on the railroad, there are three, where may be found, during the hot season of the year, people from all parts of the Coast, camping out around the soda spring, enjoying the cool shade of the lofty pines, and fishing and hunting for exercise. In the Big Bend country the hot springs are located, and around them are congregated the rheumatic, the sick from most any disease, and many who go for pleasure. The Hurney Falls are also a great attraction to the tourist, not so extensive as the Yosemite, but more exquisite. Clover Creek Falls are beautiful, and the climate there is invigorating, refreshing, and a change from the heat of the valleys.

#### PRINCIPAL TOWNS.

Redding, the largest city in the county and county seat, is one of the most beautifully located places on the Pacific Slope, commanding as it does a view of both the Sierra and Coast ranges of mountains, with all their lofty snow-clad peaks, and an equally beautiful view of the Sacramento south and cañon north. It is the commercial metropolis of the northern portion of the State.

The next town in importance and size is Taylor, commonly called Keswick, located at the smelters of the Iron Mountain Company, six miles from Redding. It contains a population of about 2,000. All kinds of

business are represented and doing well. This town is only five years old, buildings mostly frame. During the past year some very neat new residences have been erected and the town has assumed more of the permanent character.

Millville is one of the old towns of the county, situated in an excellent agricultural section, but mostly occupied by stockmen and old timers who are not sufficiently progressive to take the advantage of the surroundings and utilize their land and water. It contains about 200 inhabitants; the lands surrounding can be bought for about \$25 per acre and would be a splendid location for a colony.

Seventeen miles east of there, near Whitmore, is the German colony, who settled in the heavy pine timber fifteen years ago and are now wealthy and prosperous, their chief products being hops, vegetables, apples, berries, and stock. They own a cooperative ditch and irrigate the lands they cultivate.

Kennet and Copley are small towns on the railroad, 18 miles north of Redding. Kennet is the seat of operations for the Trinity Copper Company, and they have erected large and commodious office buildings at this point. For the past eighteen months they have been prospecting and developing their mines, and in the near future will erect a smelter of from 500 to 700 tons daily capacity.

Castella is an important small town of 350 inhabitants, is the base of supplies for the Altoona Cinnabar Mining Company, and the starting point for a short freight wagon road to Weaverville and the Sweepstakes mines of Trinity County.

Shasta, once the county seat and famous the State over for its former glory, is again likely to come into prominence as the center of productive mining regions.

Anderson, a lively town on the California & Oregon Railroad, 12 miles south from Redding, is the chief shipping point for the fruit industry of the county. Many carloads of both grain and dried fruit are shipped annually. The population is 800, and the buildings, as a rule, are very neat. The country surrounding the town is largely valley land, and thousands of acres of bearing orchards are tributary to it.

French Gulch, a town of 500 people supported by the surrounding mines, which were shut down for a number of years, is again the scene of much activity, the mines having resumed work, with promise of better results than ever before attained.

Igo and Ono, two small towns in the western portion of the county and about half way between the city of Redding and Harrison Gulch mining district, are surrounded by mines, and are also in the midst of a good agricultural and stock country.

#### MINERAL RESOURCES.

From a modest yield of \$623,000 in 1896, the value of her mineral product has increased to \$7,100,000 in 1901, and the mines of Shasta County are now producing at the rate of over \$8,000,000 per annum. When we take into consideration that but one other county of the State is credited with a production of \$2,000,000 per year, and that no metal mining county reaches even that figure, the preponderance of Shasta is at once apparent, and the county is classed with such districts as Butte City, Montana, or Cripple Creek, Colorado. Nor is such classification

far-fetched; Shasta is merely at the threshold of greatness as a mineral producer. The exploitation of her mineral resources has but begun. At no distant day, single mines will equal in output the product of the county at present—great as it is—and 10,000 men will find employment in her mines, mills, and smelters.

While Shasta's preëminence in mineral production is largely due to the development in copper, her output in the more precious metals is also very large; at the present time exceeding a million dollars a year in both gold and silver. And the production of these metals as a by-product of the copper sulphide ores will with the extension of the industry exceed the present output many times. Shasta's increase in mineral production for the past six years is shown by the following table:

1896	-----	\$623,443
1897	-----	2,224,706
1898	-----	3,510,728
1899	-----	4,681,980
1900	-----	5,574,026
1901	-----	7,100,000

The present production is at the rate of over \$8,000,000 a year, and it is reasonable to assume that within ten years' time Shasta County alone will produce as much in value as is credited to the entire State at the present time. Nothing can be said to bespeak the future prosperity of Shasta County more eloquently than the figures here produced.

The latest returns of the United States General Land Office give the area of unoccupied land within the county as being over 900,000 acres, described as mountainous, mineral, timber, farming, and grazing.

## SIERRA COUNTY.

Sierra County is situated in the eastern part of California, a little north of the center of the State, and lies between  $39^{\circ} 25'$  and  $39^{\circ} 46'$  north latitude, and between  $120^{\circ}$  and  $121^{\circ} 03'$  west longitude, Greenwich meridian.

It contains an area of 1,000 square miles, practically all of which, except Sierra Valley, is mountainous. The altitude of the county ranges from 2,000 to 8,600 feet above sea-level, the highest elevation being that of the Sierra Buttes; but the bulk of the county has an elevation of from 4,000 to 5,000 feet.

Sierra County is bounded on the south by the mining county of Nevada, on the east by the State of Nevada, on the north by the mining county of Plumas and the agricultural and stock-raising county of Lassen, and on the west by the mining portion of Yuba County.

### TOPOGRAPHY.

The main ridge of the Sierra Nevada crosses the eastern part of the county from south to north. Several spurs from the main ridge traverse the county from east to west, forming the watersheds of the four principal streams which form the drainage system of the western part. These streams consist of the Middle Yuba River on the south, with Wolf Creek, Kanaka Creek, and Oregon Creek as its principal tributaries; the North Yuba near the center, with the North Fork, South Fork, Middle Fork, and East Branch joining it near Downieville; and Cañon Creek and Slate Creek on the north; and in the eastern end of the county innumerable streams that form the headwaters of the Feather and Truckee rivers.

In the northern portion there are Bear, Spencer, Gold, Gray, Hawley, Long, Packer, Volcano, Young America, Upper Salmon, Lower Salmon, Upper Sardine, and Lower Sardine lakes, and in the southeastern portion there are Webber, English, Eureka, Meadow, and Independence lakes.

One of the peculiar topographical features of the county is the expansive valleys and lakes lying high up among the loftiest peaks of the Sierra. The lakes vary from one eighth of a mile to three or four miles in length, most of them circular in form, and, considering their small size, remarkable for their great depth.

The most important body of agricultural land in the county is Sierra Valley. This valley, which extends over the boundary line into Plumas County, is the largest, and for its size the most elevated of the valleys of the Sierras, being 4,750 feet above sea-level. It is 30 miles in length and 10 miles in width.

This valley is particularly adapted to stock-raising and dairy purposes, and a very fine quality of timothy and alfalfa hay is raised.

There are several creameries located throughout the valley, and a very superior quality of butter is made, of which most is shipped to outside markets—250,000 pounds being shipped in 1901. Considerable numbers of beef cattle are fattened in the valley for the San Francisco and other markets; besides, large shipments of sheep are made to the same markets.

The soil of the valley is a deep, black loam, largely admixed with rich vegetable mold, the result of ages of forest growth.

\$190,000,000 IN GOLD.

Since 1849, when the county was first settled, the principal industry has been gold mining. One hundred and ninety millions of dollars have been taken from its rivers, gravel deposits, and quartz veins—a record second only to that of Nevada County.

#### TIMBER RESOURCES.

The greater portion of Sierra County is practically covered with a virgin belt of soft timber. In the year 1901 the Loyaltan Lumber Company cut and manufactured 13,000,000 feet of lumber; other smaller mills cut several million feet. The Sierra Nevada Wood and Lumber Company cut 28,000,000 feet; the timber for same was mostly cut on their lands in Sierra County. The Verdi Lumber Company own timber land and use a large amount of lumber cut in Sierra County. The Floriston Paper Mill Company also own timber lands, and use a large amount of Sierra County timber at their factory. There was probably 50,000,000 feet of timber cut in Sierra County in the year 1901, and at that rate it has been estimated that the timber lands would not be cut off in fifty years.

#### STATISTICS.

The population, according to the census of 1900, is 4,017.

Climate: Average temperature, winter 47°, summer 72°; summer nights always pleasantly cool.

Annual rainfall, about 60 inches.

Lands: 100,000 acres of tillable land; over 500,000 acres of timber land, uncut; about 30,000 acres of timber land, denuded; 1,000 square miles of grazing land. No waste land.

Hay, 30,000 acres; oats, 2,000 acres; barley, 5,000 acres; wheat, 500 acres; rye, 500 acres.

Fruit trees in Sierra County, bearing: Apple, 160 acres; apricot, 2 acres; cherry, 4 acres; peach, 5 acres; pear, 10 acres; plum, 5 acres; almond,  $\frac{1}{2}$  acre; walnuts, 1 acre; small fruits, 10 acres.

Price of land, from \$5 up.

Character of agricultural soil: Black loam, very rich.

The principal towns and their population are as follows: Downieville, 500; Forest City, 400; Sierraville, 250; Loyaltan, 500; Sierra City, 400.

Tax rate (county), \$2.52.

The natural products consist of gold, sugar pine, white and yellow pine, fir, spruce, and cedar timber; livestock of all kinds; fruit, berries, and garden truck.

Manufactured products: All kinds of lumber, boxes, sashes, doors, etc., creamery butter.

Other possible products are iron, copper, asbestos, lime, nuts.

Products shipped in 1901: 500 carloads of lumber, boxes, etc., from Loyalton, 200 carloads of beef cattle, 100 carloads of sheep, 10 carloads of creamery butter.

Minerals in county: Gold, iron, copper, asbestos, and lime.

Irrigation facilities are unlimited.

Power facilities are unlimited.

Wages average about \$65 per month.

Transportation facilities: Boca & Loyalton Railroad, Central Pacific Railway, Nevada-California-Oregon Railway, and Hobart-Mills Railroad.

Communication facilities: Sunset Telephone Company, 56 boxes; Western Union Telegraph Company, and Sierra Valley Telegraph Company.

Educational facilities: 23 first-class common and grammar schools.

Health resorts: Campbell's Hot Springs, Webber, Independence, and Gold lakes.

Mineral waters: Campbell's Hot Springs at Sierraville, and Soda Springs at Poker Flat.

Hunting and fishing: Abundant in all parts of the county, trout, mountain quail, grouse, duck, snipe, deer, bear, etc.

## SISKIYOU COUNTY.

Siskiyou County is one of the most northerly of the State, being bounded on the north by the Oregon State line; on the west its boundaries are Humboldt and Del Norte counties, on the east Modoc County, and on the south Trinity and Shasta counties. It has an area of 6,078 square miles, or 3,889,920 acres, of which 900 square miles are valley land, the greater part of the remainder being mountainous.

It contains a large area of farming, mining, desert, swamp, and timber lands. The mining section comprises the western and southern sections; the agricultural district lies chiefly in the central portion of the county, while the grazing lands lie along the Oregon border.

### TOPOGRAPHY.

Siskiyou is one of the most rugged of California counties. Here the two great ranges—the Sierra Nevada and the Coast Range—meet, forming the head of the great California valley, known in the north as the Sacramento and in the south as the San Joaquin. The Coast Range, under the local names of the Salmon and Siskiyou mountains, are in the western part, while the outlying ranges of the Sierra Nevada are in the southeastern part of the county.

There are few regions of country more rugged and mountainous than that lying to the westward of Scott Valley. The whole wide landscape appears to have been formed by some mighty convulsion of the earth, that has thrown up numerous spurs or broken ranges of mountains to the height of from 7,000 to 9,000 feet, and piled them together in strange confusion. During the winter and early spring months they are covered with an immense fall of snow, that renders them a dreary and desolate waste, uninhabitable to man or beast. The snow, however, rapidly disappears under the bright, warm rays of the summer sun, and by the middle of July it is almost entirely gone, and valley, grove, and glen are robed in a mantle of verdure in which are mingled the choicest of wild flowers. Here and there, in the more elevated spots, the snow lingers in great banks throughout the season, but they only serve as refrigerators to lessen the otherwise oppressive heat of summer time.

In the southern portion of Siskiyou, standing at the head of the Sacramento Valley, rises Mount Shasta, the grandest peak in the State, whose famous height has made this portion of California remarkable to travelers. Mount Shasta is a part of the Coast Range, and is between the two ranges, in the southern part of the county. The mountain is 14,450 feet high, being perpetually hooded with snow. The valleys here are from 2,000 to 4,000 feet above the sea-level, the mountains all being among the highest in the United States. The Coast Range is, indeed, at its most picturesque in Siskiyou County, the summits being very unlike the rounded hills surrounding the bay of San Francisco, for



they rise, with their rocky formations of granite and slate, into rugged and precipitous peaks. The Sierras also consist in great part, in Siskiyou, of rough and rugged buttes, much of the county thus comprising cañons, gorges, ravines, abrupt mountain walls, precipices, and sudden little valleys. Fortunately for the material interests of the county, this wild country is covered with magnificent forests of redwood, fir, and sugar pine, while the valleys and level lands along the rivers are all extremely fertile.

In the northeastern part of the county lie lava beds, although the "lava beds" proper, of local Indian depredation history, are across the State line to the north. All of the country, in fact, in this northeastern portion of the State, embracing Siskiyou, Modoc, and Lassen counties, is a high plateau, part of which is called the Central Basin, having beds of lava divided by volcanic peaks. This plateau is from 3,500 to 4,000 feet above sea-level, having steep mountains rising still 10,000 feet higher. This whole table-land would seem to have been formed by some great volcanic overflow of a former period of history.

#### WATER-SUPPLY.

The principal river is the Klamath, which runs from the Klamath Lakes, at the Oregon boundary, across the country and down through portions of Del Norte and Humboldt counties, its watershed extending from Mount Shasta and the Trinity range on the east, to the Siskiyou and Coast Range on the west, into which flows the Shasta, Scott, Trinity, and Salmon rivers on the east side, and numerous small tributaries from both sides. The Sacramento River also rises in the southeastern portion of this county, near the headwaters of the Trinity, Scott, and Shasta rivers. Most of the McCloud River, a tributary of the Sacramento, is also in the county. At the Oregon boundary, Little Klamath Lake, some 20 miles in length, is mostly in this county, connected by Link River with the Big Klamath Lake in Oregon, which is over 40 miles long.

#### VALLEY LANDS.

The largest valleys in the county are the Scott, Big and Little Shasta, and Butte Creek valleys. Scott Valley is the most fertile of any, and is 25 miles long by from 3 to 5 miles wide. Big Shasta Valley is still larger, but is used most extensively for stock-raising, while Little Shasta is one of the richest farming sections of the coast, although not over half as large as those first named. Butte Creek Valley lies east of Little Shasta, and extends along the Oregon line from the high ridges of Klamath River to the famous lava beds. This valley has heretofore been used mainly as a stock range, but settlers are now coming in and taking up farms. Along Cottonwood and Willow creeks good farms and orchards yield fair returns, and on the mountains surrounding good feed for stock is afforded, while the gulches are excellent places for planting vineyards. Strawberry Valley is south of Big Shasta, at the base of Mount Shasta, and is a splendid section for the production of superior mountain grass for dairying. Squaw Valley, on McCloud River, farther south, is also well adapted for this purpose. The traveler along the main thoroughfares of Little Shasta Valley is favorably impressed with the number of comfortable farm houses and immense

grain and hay ranches to be seen on every hand. Little Shasta River supplies an abundance of water for irrigating the whole valley, and, as a result, the latter is beautiful to behold.

### SOILS.

The soil of Siskiyou County differs greatly in different portions. In the valleys it consists largely of a deep, black loam, merging to a sharp granitic character in the foothills. The large amount of eruptive rock that covers the northeastern part of the State of California, and which has had its source, to a great extent, in Mounts Lassen and Shasta, extends over the north and east portions of Siskiyou County, covering an area of over thirty townships, known as the lava beds district. Mount Shasta itself is situated on the western boundary of this immense lava flow, near the southern boundary of the county, and rises out of the plain a solitary cone 14,450 feet high, forming a prominent and picturesque landmark; it is entirely volcanic.

### MOUNTAIN RANGES.

Passing through the center of the county, coursing somewhat west of north, with a granitic axis, is the range of Scott Mountains, with Scott Peak, 7,800 feet high, near the boundary of Trinity County. This range is flanked by micaceous and other slates, greatly contorted, and traversed by quartz veins, dipping southwest. This granite extends northwest in a belt about 4 miles wide, where the Klamath River crosses it, 9 miles below the mouth of Scott River, and connects with the Siskiyou Mountains in the northwest corner of the county. The Siskiyou Mountains form the divide between Del Norte and this county, and are a rugged, granitic range towering up into separate peaks deeply furrowed. All the streams coming from the north show exclusively granitic boulders, and evidences of heavy denudations are very apparent where the two counties join the Oregon State line.

Along the southwest border the Salmon Mountains show a continuation of the auriferous slate formation coming up from the southeast, dipping to the west, and in this range we find some excellent quartz mining properties.

### CLIMATE.

The climate is more like that of the Middle States, but not so severe in winter; the weather in summer is warm with cool nights. The snow falls on the mountains to a great depth, and in the valleys from 12 to 30 inches, and remains on the ground from eight to ten weeks. At Fort Jones the mean annual temperature is 48.09°; the highest, 94°; the lowest, 4° below zero. The winter is mild, with but little frost, and the high altitude renders the summer delightful, with cool and pleasant evenings. The average temperature in winter is about 40°, and in summer about 65°. Siskiyou seldom has more than a few inches of snow in the valleys, which melts away in a day or two; but the high mountains are covered with considerable snow, which affords a good fountain for summer benefit, in supplying an abundance of water for mining and agricultural purposes.

Good crops of cereals are sure every season on both high and bottom lands, with late spring rains and occasional summer showers, which render irrigation unnecessary during most years. Fruit and vegetables of a temperate climate also grow luxuriantly, and are of the finest quality. The mountain meadows and hills also produce the most nutritious grasses for cattle, horses, and sheep, while all the various ravines and gulches are well adapted for gardening and vine-growing by reason of their shelter among the hills.

#### FRUIT CULTURE.

Horticulture in Siskiyou County is as yet in its infancy. Until the advent of the railroad a few years ago, there was no market to which the fruit could be shipped. Apples, pears, peaches, plums, and cherries all do well, and are of a size, quality, and flavor not to be excelled by any other mountain county in the State. Throughout the Scott Valley and Big and Little Shasta valleys a large acreage of apples has been set out. The Yellow Newtown Pippin, Winesap, Spitzenberg, Northern Spy, and Winter Pearmain, as well as the Baldwin, are the varieties which do the best.

All along the Klamath River there are favored spots where are produced the finest varieties of apples, pears, peaches, plums, and cherries, while such small fruits as blackberries, strawberries, raspberries, gooseberries, and currants are produced in great abundance. That the fruit interests of Siskiyou County will vastly increase the wealth of the people is a foregone conclusion.

The chief sections in which orchards are found in Siskiyou are Scott Valley, Little Shasta Valley, Cottonwood, and along the Klamath River. Scott Valley is the best fruit section of the county, but as it is situated about 30 miles from a railroad, little of the output finds its way to market. The varieties in favor there are apples, pears, prunes, cherries, and the more hardy fruits generally. These are generally marketed green, all that are not consumed locally being shipped to San Francisco, Oregon, Washington, Montana, and Idaho. Some of the best apples which find their way to the San Francisco markets are those from Siskiyou County.

#### OTHER INDUSTRIES.

Scott Valley is one of the largest valleys in the county and mostly devoted to the raising of agricultural products. Dairying is one of the chief industries; there are several up-to-date creameries with skimming stations attached, and several cheese factories, located throughout the valley. The class of cattle is of a very high grade; considerable numbers of beef cattle are fattened during the season and shipped to outside markets. Cereals of all kinds do well, and hay and vegetables are raised in large quantities. Hogs and poultry are raised in considerable numbers, and are valuable and growing industries. Failure of crops is unknown in this valley.

Many promising quartz and placer mines are being worked in this locality.

Shasta Valley is the largest valley in the county, and diversified farming is successfully carried on therein. Cereals of all kinds, and hay, are raised. Dairying and apple-growing are quite prominent and

profitable industries. The apple grows to perfection in this section. Much new land is coming under cultivation.

Butte Creek Valley is the center of the cattle-raising and grazing industry, its ranges affording the finest of natural feed.

Gazelle is the largest shipping point in the county, and during 1901 over 12,000 head of cattle were shipped to outside markets from this point alone.

The famous Klamath Hot Springs, one of the best known health resorts of California, is located in this county.

Lumbering is the most valuable industry, and the most extensive forests of sugar pine in the State are located in Siskiyou County. The value of the output of pine lumber in 1901 was close to \$2,000,000. Many sawmills are in operation.

The mining industry is a very profitable one. Quartz, placer, and hydraulic mines are located in different sections of the county. The gold product of the county in 1901 was close to \$1,000,000. Copper in large bodies exists, as well as deposits of iron, cinnabar, asbestos, etc. The mineral wealth of the county is almost inexhaustible.

Yreka is the county seat, and is connected by a branch road with the main line of the California & Oregon Railroad at Montague. The population is very close to 1,500.

There is a large quantity of vacant land throughout the county. The last report of the United States General Land Office gives the area of unoccupied lands as over 2,000,000 acres, chiefly timber, grazing, farming, and mineral.

## SOLANO COUNTY.

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Solano County has a position about midway between the northern and southern extremities of the State of California, and 22 miles north of San Francisco. Its boundaries are mainly natural, having the Rio de Los Putos (commonly called Putah Creek) on the north; the Sacramento River, Suisun and San Pablo bays, and the Straits of Carquinez on the south; the Sacramento River and Yolo County on the east, and San Pablo Bay, the summit divide of the Suscol Hills, and Blue Mountains on the west. It is not exactly square, but about 40 miles from north to south, and averaging almost as much east and west. It contains an area of 828 square miles, or 530,000 acres.

### TOPOGRAPHY.

Swamp lands border the Sacramento River in the southeasterly part of the county, and Suisun Bay on the south boundary, with San Pablo Bay on the southwest, and are overflowed a few inches in depth at ordinary high tides. In the southeastern portion of the county are the Montezuma Hills, rising from 50 to 300 feet above tide water, and intersected by narrow ravines or hollows, the watershed having an easterly and southerly trend. The Townsend Hills, in the southwestern portion of the county, are of a familiar character. Occupying about twelve sections of land are the Potrero Hills; and in Suisun township, Robinson Island rises out of the tules, and contains about a quarter section of land.

A very large portion of Solano County—at least two thirds of it—is valley land, the remainder being properly described as foothill. A spur of rolling hills extends from Vacaville nearly north to Putah Creek, averaging 3 miles in width, the slopes and smaller valleys of which have become noted for their early production of fruit and vegetables. On the west of these hills, and parallel to them, lies Pleasant Valley, extending to Putah Creek. The crest of the Vaca Mountains forms the boundary line between Napa and Solano counties. These mountains reach their highest elevation in Blue Mountain, which is 2,000 feet above ocean-level.

### CLIMATE.

The climatic conditions of Solano are very much like those of her sister counties, although varying much with location. The southern portion, lying on the bay, has many of the climatic features of San Francisco, modified greatly by its remoteness from the Pacific Ocean, while in the northern and eastern portions, situated farther inland, the Sacramento Valley climate is found. The summers here are long and the weather usually warm, sometimes hot. The winters are usually moderate, occasional frosty mornings are seen, and at rare intervals ice will form; but excepting on days when it is raining, the sky is clear and the weather pleasant.

## SOILS.

The soil varies from red gravel to black sandy loam, from barren patches of alkali to rich alluvium; in fact, within the borders of Solano all classes of soil may be found. That of the swamp and overflowed lands is largely composed of decayed vegetable matter, admixed with sedimentary deposits brought down from the uplands by streams. The soil in the greater part of the Sacramento Valley is a light sandy loam, especially adapted to tree growth.

In the trough of the Vaca Valley the soil varies from a sandy to a clayey loam, and sometimes to "adobe."

Throughout the hilly land to the east and northeast of Ulattis Creek the soil varies from sandy to clayey, according to the character of the parent formation. Experience has proved that the heavier soils are the best for pears, and the more sandy for peaches and apricots. In wells dug in this district, which may be said to form the western boundary of Vaca Valley, the surface soil varies from 1 to 10 feet in depth, beneath which sandstone, interstratified with shale, has been penetrated in some instances to the depth of over 200 feet.

## HORTICULTURE.

Solano County ranks among the leading horticultural counties of California, and during the past ten years has made wonderful strides in this direction. In climate and soil, Solano seems eminently qualified for horticultural pursuits, and the earliness and superiority of her fruit products have given her not only a State but also a national reputation. It is in Solano County that the celebrated Vaca Valley is found, the fruit and vegetables from which ripen and find their way to market so much in advance of that grown in most sections of the State. This valley is about 12 miles long and 2 miles wide, and owes its advantages to elevation, location, and surroundings—the surrounding hills protecting it from chilling winds, and the slopes giving to it the full benefit of the spring sunshine, while the deep, rich, fertile soil gives all the required constituents for plant life. Of the 20,000 acres in fruit in this valley, the bulk is devoted to the peach, apricot, and grape. The pear, cherry, and prune are also favorite fruits, while oranges have done well. The income of the valley from fruit annually amounts in round numbers to \$1,000,000. Trains leave daily during the season for the East loaded with fruits.

The extreme earliness with which fruits ripen in the Vaca and Pleasant valleys is attested by the fact that cherries are shipped regularly by the first of April, and apricots early in May, with all other fruits proportionately early. Vegetables are grown, too, in large quantities, and find a ready sale in the San Francisco market because of their early maturity. The advantage which is thus derived is certainly very great, and the high prices received by the fruit-growers in this section attest the esteem in which their products are held by the public, both in California and the East.

Over the whole county are found numerous orchards of various kinds of fruits, all of which do remarkably well and amply reward their owners for the labor expended upon them.

The chief fruit sections of Solano County are Suisun, Vacaville, and Laguna, and the principal varieties of fruits grown there are apricots,

peaches, pears, plums, prunes, and table grapes. Vaca Valley is renowned for its early productions of fruits, all varieties ripening there from ten days to three weeks earlier than in most other sections of the State. On this account the land is very largely devoted to the growing of fruit, and especially for Eastern and San Francisco markets. A very large proportion of the fruit is shipped green for table use. In addition to that exported, large quantities of fruit in Solano County are canned and dried.

#### ACREAGE SOWN.

The latest Assessor's returns give the following acreage: 93,000 in wheat, 800 in oats, 41,730 in barley, 290 in flax, 2,750 in sugar-beets.

#### LIVESTOCK AND DAIRYING.

The livestock and dairying interests are both considerable and profitable. The County Assessor's report shows the following values for livestock: Sheep, \$50,000; cattle, \$202,000; horses, \$52,000; mules, \$61,000; hogs, \$10,580.

Poultry interests are quite large and are increasing. A profitable field is open to this industry.

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The following special article is from "The Bee Annual" of 1902:

"Some years ago, in a contest to determine which county of Northern and Central California enjoyed supremacy in the variety of its products, the award of a golden cup worth \$5,000, offered at the Midwinter Fair to the most representative county, was made to Solano County. The longer the lapse of time, the more it becomes apparent that the choice was a wise one and that from the soil of this mid-California county can be drawn every product which marks California's preëminence.

"Solano County lies between San Francisco and Sacramento, on the line of the Southern Pacific. To the traveler it is best known by its miles of green tule lands, spotted by herds of cattle, if it be spring, and the home of seemingly countless thousands of ducks and geese, if it be the late fall or winter. But when the course of the Sacramento is followed after Suisun Bay has been traversed, it will be found that contiguous to the tule area devoted to cattle-raising and the paradise of the hunter of geese or ducks of every variety, including the highly esteemed canvas-back, there is an upland which, as a wheat area, is in no sense inferior to any in the State, but which has one advantage denied to many other localities by reason of its contiguity to cheap lines of communication with the warehouses lining the Straits of Carquinez.

"The tule land itself is but the richest soil in process of slow formation, and throughout its broad area, particularly along its border, may be found some of the best dairying sections of the State. But in the wheat ranches of the Montezuma Hills may be found a part of the 45,000 acres which go to make up eastern Solano, and which are about evenly divided into lowland and upland. Here the yield is large and the production certain. Land is low in price, compared with its productive capacity, and offers the certainty of an annual production of 56 bushels of wheat to the acre, 75 bushels of barley, a staple crop of 35 bushels of beans, and potatoes running from 75 to 200 sacks. All of this section, adjacent to the river, has a freight rate of 70 cents a ton.

"Beginning at Carquinez Straits, the voyager will see evidences of the fisheries which add to the wealth of the county. As the train leaves the straits by Army Point, back of which is situated the Benicia United States Arsenal and a four-company post, the triangular sails of the fishing fleet may be observed and their course followed until the county boundary is traversed. Salmon canneries dot the bay and swell the wealth drawn from the soil. The growing of grain is being supplemented by the successful cultivation of hemp and flax, while fruits, particularly grapes, do well. The soil is rich and practically inexhaustible. A good deal of it is adobe, which can be cropped with no apparent lessening of fertility.

"The center of this region of fertility is Rio Vista, an enterprising town of about a thousand inhabitants. It has a large trade with the adjacent islands, and is backed by a rich area of profitably-farmed land. The town has recently sold \$20,000 in bonds for the purchase of a water system, and is a growing and thriving community. It has good schools and provides for the higher education of the young by St. Gertrude's Academy, where the young of both sexes secure a thorough and beneficial training. Rio Vista is a progressive town and its future is marked by an assurance of an ever-increasing prosperity.

"To the west from the line of the Southern Pacific lie Green Valley and the portion of Suisun township devoted to fruit. Green Valley is an agricultural section which was among the first to attract settlers. It has been devoted to vineyards for many years. Portions have recently been planted successfully to sugar-beets. Cordelia is the metropolis of Green Valley township, and is supported by extensive quarries, where basalt blocks for neighboring cities are fashioned. It has several wineries and enjoys an excellent reputation for their products. It has a large acreage in fruit, although usually not of the early varieties.

"Solano County is unfortunate in that its railroad lines, like the Union Pacific, traverse in great part the most uninviting portion of its territory. Looking toward the hills which divide Suisun township from Napa County, there is hardly a suggestion of the area devoted to fruit or the matchless character of its orchards. Large fruit-houses are seen, however, which are engaged in the shipment of green fruits, and the handling of the dried products of the ranch by the hundreds of tons. Necessarily all of these great packing and exporting houses employ a large number of men and women to handle the fruit in the various stages of its preparation for the East, or for Europe, where a large part of it is shipped.

"But to appreciate the capacity of Suisun Valley, a visit should be made to this notable section. It does not boast of its early fruits, but it has one of the largest orchards in California, and through every acre of its orchards it gives evidence of the careful character of husbandry practiced in the locality in the trimness of its orchards, and its generally attractive appearance. From this portion of the county there are shipped nearly five hundred carloads of fruit, comprising cherries and other varieties, but composed in the largest degree of pears, for which the valley is particularly well known. Land in Suisun Valley is high when purchasable, but it is low in proportion to income returned and will pay dividends on any price at which it has ever yet been quoted.

"Suisun is the center of this section and also for a large portion which extends east through Denverton township and meets the portion com-



prised in eastern Solano. It is devoted largely to grain-growing and cattle-raising and is also used extensively for sheep pastures, which have been profitable and have been the means of building up several large fortunes for those engaged in it. It has the advantage of cheap communication with San Francisco by means of Suisun Slough, which assures a low freight rate without any appeal to the Board of Railroad Commissioners. The enterprising people of Suisun have recently organized a company and will construct a boat to do a freight business between that point and the city, at rates with which the railroad will not compete. Suisun is the point from which freight is scattered throughout the entire northern portion of Solano County, and does a business vastly disproportionate to its size. Teams haul freight daily in competition with the railroad as far as Vacaville, ten miles to the north. The county seat, which is located at Fairfield, just north of Suisun, and separated from it diagonally by the railroad, does not contain a court-house which is an architectural attraction. But it does, 'tis enough, 'twill serve,' while the county owes no debt, and taxation is limited by reason and a proper care of roads and highways on lines of permanence.

"In the center of the county, stretching to the river lands on the east, is a low country devoted to sheep, cattle, and barley. Frequently during the winter it is under water. But farming is profitable in Denverton and throughout Maine Prairie townships, and they are the resorts of hundreds, who find their bags of game only limited by the capacity of an ox team. In the northeast corner of the county lies Tremont township. To the south and east it is devoted to grain and cattle. Along the north boundary of the county in this township may be found some of the best lands devoted to grain farming or fruit. In fact, lying along the south bank of Putah Creek, which forms the division line of the county on the north, is a section of land which for fertility can not be surpassed. It is early, too, and is being rapidly cut up into orchards which are probable sources of profit to proprietors.

"The area devoted to fruit for a considerable period begins somewhere east of the line of the Vaca Valley and Clear Lake branch of the Southern Pacific, and extends westward to the mouth of Putah Creek Cañon, and south through Vacaville township and includes the western portion of Elmira. But what has been done in Vacaville township in the line of a transformation of a wheat section to fruit growing, is being repeated successfully in Silveyville township. There are no high-priced lands there, but there are no better lands in the State. Like a large portion of Vacaville township, it was a part of the Vaca and Pena grant of 44,000 acres made in 1844, and was doubtless selected on account of its surpassing fertility.

"At the easterly end this strip along the creek was devoted to raisin grapes long before Fresno was on the map, and its vineyards are no less productive than in the past. Every foot of this section is good land and is capable of supporting a population of thousands. It is good territory for grain, of course. Its demonstrated value for fruits is equally certain, while such acreage as has been planted in sugar-beets shows a product unusually high in percentage of saccharine matter.

"Sweeping south from the creek there is a gentle slope to the east, but no change in the fertility of the soil. Silveyville township is rich by nature's gifts and by the accumulations of her people. It is not every locality which can boast millionaires whose lives have been devoted

to wheat-growing, but they can be found in Silveyville township. Recently a creamery has been built at Dixon, the center of the township's population. It is a source of profit and is awakening the minds of the people to the value of a more intensive farming and the diminution of the average ranch area. The creamery in Dixon is telling the old story of the little farm well tilled, and is certain to be the pioneer of numerous similar profitable enterprises. Dixon is a town of wealth and conservatism. But there is a spirit of enterprise pervading its people, and the changes which are promised in that favored locality will be markedly beneficial, both as to an increase of profits and of population.

"All of northern Solano can be irrigated. Little of it is. The waters of Putah Creek are practically unutilized. Away to the north is Clear Lake with 52 square miles of water ten feet deep, only waiting the application of capital to one of the most feasible schemes of irrigation within the knowledge of those who have given matters of this kind consideration. But while the flood waters of the mountains run unchecked to the sea, the process of wresting the farm from the ranch is going on. Pumping plants are being installed on ranches contiguous to Dixon, and more money is being made off tracts of limited area than was secured from a broad expanse of acres. Dixon has started upon a new career, in which she invites the people of the East. There they will find all of the conditions demanded by a consideration of an avocation where health is assured, and rich rewards wait on industry.

"Between Dixon and Vacaville lies Elmira. It is a small town, but the center of a broad expanse of acreage, devoted to cattle-growing, wheat-raising, and diversified industry. There are a good many in this section who surpass the profits of the wheat ranch by the income secured by the housewife in attending to the needs of poultry, or the dairy, as a means of supplementing income. Its climate is delightful. A little warmer than Suisun, which is a modified temperature of the purely bay area, and a little less warm than Dixon, in Silveyville township, to the north, or Vacaville to the west, any part of Elmira will be found profitable in any branch of agriculture.

"Vacaville is pretty well known. Its fame seems to have spread abroad. Walter T. Swingle, of the United States Agricultural Department, on returning from Africa, in connection with the Government importation of the date palms to be planted along the Colorado River, learned at Paris that in Vacaville the date palm flourished, and visited the place for the purpose of its examination. Along the south bank of Putah Creek, and in a section tributary to Winters, the shipping point just across the creek, is the old Wolfskill homestead. Here some forty years ago the proprietor of the Wolfskill grant planted the seeds of dates bought for his children. In a frostless area they grew unchecked, and near the house of Colonel Sam Taylor this purely tropical product—which demands that it plant its feet in the fountain, while its top revels in the furnace of a Sahara sun—can be found annually maturing its fruit. Date palms are not infrequent in California, but it appeared that, unless the Government experiments along the Colorado are a success, it is the only fruit-producing date tree in the State. In citrus culture the same tropical character is found. In Vacaville and in Silveyville township there are citrus groves aggregating forty acres in extent. That more oranges have not been planted is due to the fact that deciduous fruit-growing has been found sufficiently profitable to suit the most

exacting. Oranges may be grown in these sections in any quantity and placed in the San Francisco or Eastern markets ahead of the products of Los Angeles or Riverside. The quality of earliness is not confined to deciduous fruits, but embraces the citrus varieties as well. The county took a premium for oranges at the Midwinter Fair, held in 1894, and can match from its groves the best product of any part of California.

"No stronger tribute could be offered to the tropical character of the northern portion of Solano. It might, however, be supplemented by the shipment of cherries from Vacaville on March 31, during two seasons, and an annual and certain production of the earliest cherries grown in California, as well as the first apricots, peaches, and other varieties. It is equally early in the production of vegetables, and holds the San Francisco market with its early products for weeks, to the exclusion of all other localities. It is a large shipper of green and dried fruits, and in 1901 shipped 821 carloads of green fruit, and enough dried to make the total 950 carloads out of Vacaville during the season. Out of the 1,400 carloads of fruit shipped from Solano County last year, six tenths were from Vacaville, three tenths from Suisun, and the other tenth from the fertile strip along Putah Creek.

"In manufacturing, Solano County is prominent with the location of the navy yard at Mare Island, opposite Vallejo. In Benicia, however, in addition to the Government arsenal, there is an extensive manufactory of agricultural implements, which ships its products to every portion of the world, and furnishes employment for a large number of hands; also extensive tanneries which are continually being enlarged, as they find an ever-widening demand for their products. The Bay Counties power line, which traverses Solano County transversely from the northeast to the southwest, furnishes Dixon, Elmira, Vacaville, Suisun, Fairfield, Cordelia, Benicia, and Vallejo, a potentiality that surpasses Holyoke or Fall River as manufacturing centers. It is being taken advantage of north of Suisun by an extensive plant for making cement. A company is expending a quarter million of dollars in improvements, which promise to add much to the wealth of Solano County. Benicia is a former State capital, as was Vallejo, has a population of several thousand, a climate that is cool and exhilarating, and is an attractive residence location tributary to San Francisco.

"Vallejo is the metropolis of the county. It is a money city. Every month in the year \$100,000 in gold coin comes in for circulation among its people. It is a progressive city. Its people are up and doing. They have abundant faith in public utilities, and they practice them as well. The spirit of self-reliance predominates. It is coming to be a city of homes. Located on a magnificent waterway, and built on hills that lend grandeur to the view; with a climate that is balmy with the rigor of sea air, equable in its character, and practically free from fogs, Vallejo is an ideal residence city. There is an air of stability in its physical make-up. Ever since the Mare Island Navy Yard, its chief dependence, employing from 1,500 to 2,000 men, was taken from a political, and placed upon a civil service basis, thus insuring retention of employes regardless of changes in National administrations, Vallejo has been advancing. One good thing has led to another as the result of this policy, and not the least meritorious was the confidence it gave the people to engage in business for themselves. As we have already stated, Vallejo is a firm believer in public utilities. It owns and operates its own water works, that yield a revenue of \$36,000 annually, at an operating cost of less than \$5,000.

The system is a gravitation one, the water being brought to the city from the mountains, 15 miles distant in a direct line. No city in the State has better results or better water than has Vallejo. These water works have been owned by the city since 1894. In the meantime, the city has constructed a most perfect sewer system, put down substantial sidewalks, has a mile of bitumenized streets, with more to follow, and has many hundreds of new and modern cottages that make the city attractive. It is, in fact, a city of industry and enterprise. Its latest move is to secure the construction of electric railroads, that are to connect Benicia, in this county, and Napa and St. Helena, in Napa County. Within the year just passed five franchises have been secured, at the cost of considerable labor and money, and capital is under a written contract to construct the road. A few miles north of Vallejo a corporation has been formed to develop a cement deposit that is superior in quality to the famous Portland, and endless in quantity. The company is capitalized for \$2,000,000, and many thousands of dollars are already invested in the enterprise. Three miles northeast of the town the old St. John quicksilver mine is being reopened at a cost of thousands of dollars. In the early 70's this mine yielded \$500,000, and was closed down in the face of high-grade ore, because of over-production and consequent low price of quicksilver. The population of Vallejo now approximates 10,000. The great increase has made necessary additional school accommodations, and new buildings are to be constructed. At the city election, in March last, its people voted, by ten to one, in favor of the issuance of \$90,000 in bonds, to be used in enlarging the delivery capacity of its water works system, the rapid growth in the number of consumers—from 1,100, in 1894, to 2,000, in 1901—having made this step an absolute necessity. It enjoys the advantages of a splendid high school, and its schools have a magnificent corps of teachers. It has the free postal delivery system; a splendid public library; a well-organized fire department; owns and controls a public wharf, which is not only an ornament, but a source of revenue to the city; has day and night electric service; has a women's improvement club of two hundred active members; has forty-four fraternal orders and societies, and has a great future. It is a city closely in touch with San Francisco; three steamer lines engaged in freight traffic; one steamer line making three round trips daily, built like a yacht, and fast as a torpedo-boat, doing a splendid passenger business, as well as that done via railroad, with round-trip fares ranging from 50 cents to \$1.50. In addition to these evidences of a progressive city, it has a flouring mill and warehouse, tannery, salmon cannery, planing mills, etc., giving employment to hundreds of hands. The opportunities for the profitable investment of capital are not excelled by any other place. The conditions are ripe for a modern opera-house, an up-to-date hotel, and business blocks as well. In some respects the city is lacking in these things, and the capital first on the ground to take advantage of them will profit. In the last year an active Chamber of Commerce has made the subject of ship-building in navy yards a material issue, and ten thousand labor councils have petitioned Congress to utilize its navy yards to the utmost as public utilities. The large plant at Mare Island is being vastly improved, and is to-day equipped with the finest machinery for the construction of men-of-war. A new dock, larger than the present one, is now being built, to cost \$1,250,000. The future of Vallejo, as a business and as a residence place, is aglow with hopeful signs, and its people are happy, united, and prosperous."

## SONOMA COUNTY.

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Furnished by the BOARD OF SUPERVISORS and S. A. LUCE, Secretary of the Board of Trade.

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Sonoma County is bounded on the south by San Pablo Bay and Marin County, on the east by Lake and Napa counties, on the north by Mendocino County, and on the west by the Pacific Ocean. Its Napa, Mendocino, and Marin boundaries are straight, but its ocean boundary, of more than 65 miles, conforms to the irregularities of the shore. It has an area of 1,500 square miles, or 972,000 acres. On the bay shore it has a frontage of 20 miles.

There is no sameness in the surface of Sonoma County. Variety is a leading characteristic of every township. Valleys, and hills, and mountains appear to have been planned, and their distribution so ordered as to give the best effect. The great central valley, extending entirely across the county from south to north, and having a varying width of from 6 to 15 miles, commands attention by its area and remarkable fertility. The coast range of hills breaks the monotony of the landscape in that direction, while to the southeast Sonoma Mountain rises to the height of 2,400 feet, with Bennett Peak and Mounts Taylor and Hood farther north. Away to the northeast Geyser Peak has an elevation of 3,740 feet, and from its greater height, just beyond, St. Helena looks down upon the whole of Sonoma County. And these hills and mountains are not for ornament alone. High up on their fertile slopes, yes, even upon their very summits, are numbers of the finest homesteads in this county. The area on which rough stone is found to interfere with general farming operations is quite small. Out of the immense area of land in Sonoma County, at least 200,000 acres are valley land, the richest soil known, being a black loam; 200,000 acres are rolling or higher tableland, with an exceedingly rich alluvial brown soil, with considerable sand. This, as a rule, is the best fruit land. We may class 200,000 acres as foothill lands, adapted to many kinds of agricultural and horticultural products and pasturage. At least 100,000 acres of mountain land are adapted to grazing, and about 80,000 acres are redwood timber lands of the most magnificent growth to be found anywhere.

### LOCATION.

The location of Sonoma County is a matter to which we would call particular attention. As comparatively few Eastern people have a map of California in which the counties are designated, we will endeavor to locate it with respect to its relative position to and distance from such important points as generally appear on all maps. Distances are reckoned from the county seat, Santa Rosa, which is centrally situated. It is 48 miles north of San Francisco, the great metropolis of the Pacific Coast; 68 miles due west of Sacramento, the capital of the State; 400 miles northwest of Los Angeles; 300 miles south of the northern boundary of the State, and comes within 50 miles of being the farthest western

point of the western coast of the United States, except Alaska. The southern boundary of the county fronts on San Pablo Bay, an arm of San Francisco Bay, about 30 miles north of San Francisco. It is 350 miles farther west than San Diego, and 280 miles farther west than Los Angeles. On the west it has a coast line of 60 miles, and has several small but valuable harbors, bays, and beaches of its own.

#### VALLEYS AND WATERCOURSES.

Sonoma Valley, from which the county derives its name, is about 20 miles in length, with an average width of 8 miles. It lies parallel to Petaluma Valley, from which it is separated by a range of mountains.

The streams and watercourses of Sonoma County are numerous, and might, if it were necessary, be utilized for irrigation. On the coast frontage streams of greater or less size flow down from the adjacent hills, at short intervals, to the sea.

Russian River, the largest stream in the county, enters on the north, flows in a southeasterly direction for 20 miles, turns Fitch Mountain, and finds its way to the lowest depression in the Santa Rosa basin, from which it breaks through a gap in the Coast Range to the Pacific Ocean. This river gathers the waters from three fifths of the area of the county. Its largest tributary on the northeast is Dry Creek, flowing out of the Coast Range through a splendidly fertile valley 20 miles long and 2 or 3 miles wide, running parallel with and merging into the central valley at the point where Dry Creek delivers its waters to Russian River.

From the northeast, the largest tributaries of the Russian River are Sulphur Creek, upon which the celebrated Geyser Springs are located, and McDonald Creek, which flows through and out of St. Helena Valley into Russian River. From the mountains on the east, Mark West and Santa Rosa creeks come down to the plain, and flow for 10 miles across it parallel with each other and 4 miles apart. They empty into the laguna or lake of Santa Rosa, which overflows at high water into Russian River. Copeland Creek comes into the valley from the south, flows northerly, and also empties into Santa Rosa Laguna.

#### RAINFALL.

A fair estimate of the rainfall throughout the county may be formed from the record here presented. The observations were made at Santa Rosa. As Santa Rosa is centrally located and is not subject to weather conditions appreciably differing from those in other portions of the county, the record may be considered as fairly representative of the whole. The table shows the rainfall during the growing season, commencing the year previous with the month of September, and ending with June of the year named.

Year.	Inches.	Year.	Inches.	Year.	Inches.	Year.	Inches.
1854.....	29.00	1866.....	28.00	1878.....	44.65	1890.....	65.75
1855.....	30.00	1867.....	40.00	1879.....	31.56	1891.....	21.45
1856.....	25.00	1868.....	50.00	1880.....	31.16	1892.....	28.83
1857.....	25.00	1869.....	26.00	1881.....	34.22	1893.....	34.07
1858.....	23.00	1870.....	25.00	1882.....	17.38	1894.....	27.16
1859.....	34.50	1871.....	17.00	1883.....	24.45	1895.....	45.81
1860.....	21.00	1872.....	40.00	1884.....	20.40	1896.....	31.48
1861.....	17.00	1873.....	21.56	1885.....	15.32	1897.....	31.48
1862.....	46.00	1874.....	29.54	1886.....	37.24	1898.....	18.74
1863.....	17.00	1875.....	23.30	1887.....	19.64	1899.....	23.04
1864.....	12.00	1876.....	34.55	1888.....	20.97	1900.....	28.83
1865.....	26.00	1877.....	15.25	1889.....	25.99	1901.....	30.69

## POULTRY INDUSTRY.

It may seem a broad assertion, but nevertheless it is true, that Sonoma County, together with her great wine, fruit, dairy, stock, and other large industries, produces as much poultry and eggs as all the balance of the State put together.

The annual output of this commodity is upward of \$2,000,000 in value. The advantages of the poultry and egg industry in Sonoma County are, its nearness to a reliable market, quick cash returns, and length of season.

The lower portion of the county, in the vicinity of Petaluma, is largely devoted to this industry; possibly one half of the poultry and eggs that are shipped from the county are shipped from Petaluma. It is stated on good authority that from this point alone 2,600,000 dozen eggs and 20,000 dozen chickens were shipped last year, as high as 14,000 dozen eggs being shipped in one day.

To convey an idea of the profits in the business we quote the following from the Petaluma "Land Journal": "One man near town has 2 acres, keeps 800 hens, and makes \$1.25 per hen, clear of expenses. Another, with 20 acres, has banked in three years \$3,000, clear of all expenses and living. A few make as high as \$1.50 to \$2 per hen, and there is no danger of collapse in prices. As proof, note the hundreds of carloads of poultry and eggs imported from the East each year by the commission houses of San Francisco."

The Sotoyome "Sun" says: "Mr. A. B. McMichael has 200 hens, some of which are only pullets. They are mostly White Leghorns and Minorcas, with a few Plymouth Rocks. From this flock he sold during the past three months 600 dozen eggs. The price received for the eggs ranged from 17 to 38 cents per dozen. The total receipts for eggs for the period named was \$155.50, or an average of 25½ cents per dozen."

These are only a few instances among many to which we could refer.

With a few acres of land well stocked with chickens a family can make a good, independent living. The poultry business is like the banking business—cash on the spot; and there is no surer road to success than along the chicken route in Sonoma County.

## STOCK AND PASTURES.

Cattle are raised here on a large scale, principally for dairying purposes, and the very best breeds are represented. Our grazing land is unsurpassed anywhere. From December 1st to July 1st the pastures are green, being thickly carpeted with the native grasses, alfalfa, white clover, bur clover, wild oats, bunch grass, and many other kinds. Stock will thrive on such ranges the year round without extra feed. In the valley lands it requires about 5 acres per cow per year for dairying purposes; in the hill lands from 10 to 15 acres per cow. According to the Assessor's reports the number of cattle in the county in 1901 was 31,512 head; sheep, 29,844 head; horses, 12,860 head; hogs, 3,500 head. In the northern part of the county sheep-raising forms an important industry. Much of the country in the coast region is devoted to pasturage purposes.

## DAIRYING.

Sonoma County is justly proud of her fine dairies. The milch cows are all of a choice, selected breed of cattle, no poor stock being used. Owing to this forward breeding and the further fact that the nutritious grasses that grow in the dairy districts make exceptionally fine feeding ground, the annual product per cow is, on an average, 50 to 100 per cent higher in this and adjoining coast counties than in most any other part of the State. In other words, the average annual production of butter for the whole State is 100 pounds per cow, while in this section the average annual production per cow will run from 150 to 200 pounds.

A conservative estimate places the number of dairy cows in the county at about 27,000 head, that give an annual yield of nearly 5,500,000 pounds of butter, valued at \$1,100,000, or an average of about \$41 per cow, saying nothing of the cheese produced.

The dairies number from 40 to 250 cows each, the greater number being 100 to 200. Petaluma, Santa Rosa, Bodega, and Valley Ford are the chief places from which dairy produce is shipped. From these points, by rail and water, large shipments are made weekly to San Francisco and other large markets.

For sixty-five miles the western boundary of Sonoma County is washed by the waters of the broad Pacific. The moisture that rises from the ocean is absorbed by the ground, and from this fact the pastures are kept green nearly the year round, making this section the ideal spot for the dairyman and stock-raiser.

The total of all expenses in the actual manufacture of butter is three-fourths of a cent per pound. The breeds of milch cows represented are mostly Jerseys, Holsteins, and Ayrshires, with some strains of Durhams, and fine American breeds. All milk used at the creameries is bought and sold by weight. The average test shows about 4 per cent, or 4 pounds of cream or butter-fat to 100 pounds of milk. In well-managed dairies the yield of butter per cow per annum is from 150 to 200 pounds.

The value of the growth of stock cattle is \$10 per head per year, until the limit is reached, and this without other feed than that obtained by grazing upon lands valued at from \$5 to \$25 per acre.

## HOPS.

In the production of this article Sonoma County leads the world. There is no place in this or any other country that can produce the quality equal to a choice Sonoma. Most all other hop-raising sections, outside of a few counties in this State, are subject to crop failures, caused chiefly by vermin, mold, honey-dew, rust, red spider, or severe storms. Such calamities are unheard of in this county. Vermin is the most dangerous enemy to a hop-grower. A crop may be in splendid condition until the time of harvesting, when this pest may sweep over the section and destroy the entire crop. These insects have had thirty-six years in which to make their appearance in Sonoma County. They can not exist here; they require a warm, muggy atmosphere in which to flourish. During our hop harvest we are always favored with bright, sunshiny days. The very best quality of soil—and we have plenty of it here—together with an excellent climate, is required for a successful culture of hops. In New York state hops are seen growing on elevated



land, while in Sonoma County the rich, sandy loam of the river and creek bottoms is employed. In the East and Europe the land has been worked out, and for this reason an enormous expense is incurred by the constant use of fertilizers. The Sonoma County grower never has to resort to this. The richness of the soil, together with the adaptable climate, assures the producer an average yield of about 1,800 pounds of dried hops to the acre. This enormous yield makes it possible to place Sonoma's product in the Eastern and European markets for less than the cost of growing the hops there; the average yield there being in the neighborhood of 1,200 pounds to the acre.

In laying out a hopyard two systems are used, the pole and the trellis. In the former the vines are set about 8 feet apart, and trained on poles 9 feet in height. The cost in addition to the value of the land varies from \$35 to \$50 per acre, according to conditions. This includes everything—roots, poles, and labor. In the trellis system the vines are set about 7 feet apart, and trained on a trellis work of poles and wires, standing from 16 to 18 feet above the surface of the ground. The total cost of this system per acre is from \$60 to \$75, and when once installed is permanent, there being no further expense attached.

In this county the planting is done from the first of January to the first of April. The crop is harvested from the 25th of August to the 25th of September.

There is no place where hop culture is carried on that can produce from the first year's planting the amount of the dried product per acre that can be raised in Sonoma County. The largest yield ever raised in this county was produced in 1899, the amount being 18,000 bales. At an average of 190 pounds to the bale this would make a total of 3,420,000 pounds. In 1900 the yield fell to 8,000 bales; in 1901 it increased to 15,000 bales. The average cost of placing hops on the market is 8 cents. The average price obtained by the grower is 15 cents, making a profit of 7 cents per pound.

The hop industry in Sonoma County is certainly assuming greater proportions. Other sections are gradually decreasing their acreage, while Sonoma, on the other hand, is gradually increasing her acreage. Most of the hops are shipped to Eastern and European markets, but there is a growing demand for our product in Australia, New Zealand, and the Orient. The adaptability of this county in producing the quantity and quality has for its proof placed the Sonoma County growers, as a whole, on a better financial footing than the growers in any other hop-raising section of the world.

#### HAY AND GRAIN.

In this Western country hay is grain cut before it is ripe. Sonoma County produces large quantities of wheat, oat, barley, and alfalfa hay, which runs all the way from 1 to 3 tons per acre. It costs from 90 cents to \$1 per ton for baling. Good hay can be raised here wherever one can plow. It is harvested in May and June. Hay brings from \$9 to \$12 per ton. The yield last season was 45,000 tons.

The acreage devoted to the different cereal products in Sonoma County, as reported by the Assessor, is as follows: Wheat, 12,200; oats, 16,240; barley, 3,640; corn, 1,210. The State Agricultural Bureau estimates that the yield, in bushels, was: Wheat, 200,000; oats, 360,000;

barley, 112,500; corn, 52,500. Our soil, taken as a whole, is particularly adapted to oats, which many consider the most profitable of our grain crops. However, wheat, barley, and corn are extensively cultivated in every locality at a splendid profit. All grain is harvested in June and July. Corn is grown mostly on river bottom land, and yields on an average 50 bushels to the acre.

### FRUIT-GROWING.

One of the chief industries of Sonoma County is fruit-growing. Last season there were in cultivation 36,360 acres planted to fruit trees, and the increase up to the present time amounts to about 10 per cent. The total number of fruit trees of all kinds in 1901 was 1,276,278. This estimate is made from the Assessor's figures, and 10 per cent should be added to cover numerous small holdings in less than acre lots. The estimated value of a fruit tree from the time it is planted to the time it comes into bearing is \$1 per year. The first cost of tree for setting out is from 10 to 15 cents each. The right season for planting in this county is during the months of February and March. While many fruit-driers are operated here, many authorities prefer the sun-drying process, which involves no expense and can always be relied upon. The sun-dried product is also of superior quality and flavor and will bring a correspondingly higher price in the markets.

*Peaches.*—The peach is a great favorite among fruit-growers, as the trees commence to bear the second year after planting. The soil best suited to them is a sandy loam, and they may be cultivated with equal success either on the hillsides or in the valleys. They are set 20 feet apart, 108 to the acre. After the trees get into bearing and are large enough to hold the fruit, the income will depend principally upon the care bestowed upon them. Peaches of standard size for the market are those that will fill a 2-inch hole. If larger than this they are called "extras," and if smaller, "seconds." The latter are mostly used for drying. In this county this is done in the sun, thus producing a far better quality than is possible by artificial methods. The fruit is harvested in July, August, and September. All varieties of the peach thrive here. The area in cultivation is now about 2,750 acres. In 1901 there were 197,748 trees bearing, and 13,130 non-bearing.

*Prunes.*—This fruit should have the best quality of soil, for the tree is a heavy bearer and of comparatively short life—about twenty-five years. The trees are set 20 feet apart, 108 trees to the acre, and they come into bearing after five or six years. The crop is picked in October. Last year there were 5,700 acres in bearing prune trees. With 100 trees to the acre, we have 570,000 as the approximate number of prune trees in the county. The yield last season, expressed in the quantity of the dried product shipped, was 700 carloads of an average value of \$400 per car of 12 tons each, or a total value of \$280,000. There have since been planted an additional 500 acres, an increase of about 10 per cent.

*Pears.*—The trees are planted about 20 feet apart in a clay subsoil, and bear after five or six years. Harvesting takes place in September, October, and November. The acreage in pears last year was 1,300.

This has since been increased by 50 acres. Four of the largest pear orchards in the county have a combined total of 10,300 trees. The number of pear trees, all told, in the county is 135,000.

*Cherries.*—The trees begin to bear within five to seven years after planting. They are set 20 feet apart, and do best in a clay subsoil. The fruit ripens in May and June. There are 365 acres now in cultivation. In 1901 there were 40,040 trees in the county.

*Apples.*—The land best adapted to apples is that having a clay subsoil. The trees are set 25 feet apart, or 76 trees to the acre, and bear within from five to six years after planting. The fruit is harvested in October, November, and December. The number of bearing trees in the county is 161,251; non-bearing trees, 70,270; total, 231,521. At the present time there are over 2,500 acres devoted to apple culture. The finest apple land in the world is found along the northern coast, and sells at from \$10 to \$20 per acre. The price paid for apples averages somewhere around \$10 per ton, although this is often exceeded in the special varieties. The average yield is in the neighborhood of 8 to 10 tons per acre.

*Citrus Fruits.*—The growing of citrus fruits, though comparatively a recent industry, has gained a strong foothold in this county, and present indications point to a steady increase in acreage during the future. It was first demonstrated that the orange could be successfully grown here by General Vallejo and Nicholas Carriger about thirty years ago, but it has only been within the past six or seven years that the fact has become generally recognized. There are now about 5,500 orange and from 900 to 1,000 lemon trees in the county. Though mostly young, they are thrifty bearers, and the crop increases with each succeeding year. The most popular varieties of oranges are Mediterranean Sweets and Washington Navels. The three best sizes are those going 126, 150, and 176 to the box, and the prices range from \$1.50 to \$2.50, according to size. The orange season begins early in December and lasts until June. The lemon thrives here as well as the orange. From the time the tree comes into bearing ripe fruit may be picked every month in the year. It is in blossom continuously. The best sizes of lemons are those that run about 300 to the box. Prices range from \$2.25 to \$3.50. Both orange and lemon trees are set 20 feet apart, or 108 to the acre. They come into bearing after five or six years.

*Olives.*—While the olive requires a good, well-drained soil, there are many orchards in this county that are planted around the rocky foothills where nothing else can be grown. They are set from 20 to 32 feet apart and come into bearing after five or six years. There were 400 acres in cultivation last year, and 50 more were added this spring. The number of bearing trees is 26,720; of non-bearing trees, 16,540. Olive culture is making rapid strides in Sonoma County. The first olive grove of about 90 trees was planted in 1870, and from the crop was produced the first olive oil in the county. It was awarded a gold medal at the Paris Exposition, and received first premium at the World's Fair in Chicago, 1893. This county now has about 50,000 olive trees of the very best varieties for oil and pickling purposes. The oil produced here has established an excellent reputation and is usually sold ahead

of its annual production. Olive oil costs \$2 per gallon to manufacture, and sells at from \$3.50 to \$5 per gallon. Though slow in coming into bearing, the olive tree is a paying and lasting investment. It has a life of thousands of years, and even history does not enable us to determine it accurately, but it is an absolute fact that olive trees mentioned in the Bible are living and bearing fruit at the present time, notably those in the Garden of Gethsemane in Jerusalem. Every man who owns a farm or a house-lot will find the olive tree not only an embellishment to his premises, but profitable as well.

## ACREAGE AND VARIETY OF FRUIT IN SONOMA COUNTY.

	Acres.
Apple .....	3,000
Apricot .....	200
Cherry .....	500
Fig .....	50
Olive .....	500
Peach .....	3,500
Prune .....	6,000
Pear .....	1,000
Plum .....	500
Lemon .....	10
Orange .....	100
Grape .....	20,000
Walnut .....	500
Almond .....	100
Berries .....	600

## NUTS AND BERRIES.

*Walnuts.*—A well-known authority states that Sonoma County is the true home of the English walnut. Indeed, there are few places in the world where it can be more successfully cultivated. What it needs is a suitable climate, for experience has demonstrated that the quality of the soil is of little consequence, provided only that it is deep, for the trees have a very long root. They also have widely spreading branches, and must be set 50 feet apart. This will permit of but 16 to the acre, but they are very prolific, and the large returns fully justify the space covered. It is only recently that the walnut has attracted the attention of growers in this county, but now that its possibilities as a money-maker are becoming more widely known the acreage devoted to its cultivation is rapidly increasing and it promises to become one of our great industries. The number of bearing trees is 2,450; non-bearing trees, 2,210. At present there are 500 acres in cultivation. Trees for planting cost usually about 15 cents, and they bear after six or seven years.

*Blackberries and Raspberries.*—Sonoma is the greatest blackberry county in the State. Last year there were 500 acres in bearing vines, which produced 1,000 tons, or 100 carloads, of first grade fruit. Of raspberries, 250 tons were shipped. The blackberry season begins in the latter part of June and runs into September. Blackberries are raised extensively. Raspberries are harvested in May, June, July, and August.

*Dewberries.*—There are now 20 acres of Lucretia dewberries. Last year a part of the crop was shipped to Montana and brought 15 cents per pound. The season is from about the 10th of June to the 10th of July.

*Gooseberries.*—Of this valuable product we raise without difficulty the largest and finest varieties. They often sell as high as \$70 per ton. Their season is in May and June.

*Strawberries.*—We do not ship many strawberries out of the county, most of the supply being used for home consumption, but those raised are of the very best quality. Some varieties are ready for market as early as February. The season extends into November. The raising of strawberries for the market forms an important and profitable industry.

#### VEGETABLES AND MELONS.

Sonoma County grows vegetables throughout the entire year, and often raises from two to three crops within this time. In the East nearly every farmer has his vegetable garden, but he raises other products in connection with it. In the West every city and village has its professional gardeners who grow nothing else but vegetables, and supply the market with them.

Potatoes are a staple product of this county. They are grown in almost every section, attain a large size, and are of the finest quality.

Asparagus is particularly adapted to our soil and climate, and we ship some of the best that can be found in the markets. It brings from \$1.50 to \$2.25 per box containing from 40 to 50 pounds. There are great possibilities for an increased acreage in this vegetable. An average crop is from 80 to 100 boxes per acre. The present profits vary from \$100 to \$300 per acre.

Tomatoes are produced in great quantities for canning. String beans are also grown very extensively for this purpose.

Rhubarb brought from 75 cents to \$1 per box of 40 pounds this spring. A greatly increased acreage of this plant may be looked for in the near future.

There were more than 150 acres bearing watermelons last year. The melons were of large size and fine flavor, and were worth \$100 per car-load. In the San Francisco market they sold as high as \$4.50 per dozen.

#### GRAPES AND WINES.

Sonoma is the largest and most important grape and wine producing county in the State. Her wines are justly famed throughout the world, and took first premium at the Genoa Exhibition in Italy in 1892. A gold medal was awarded at the World's Fair in 1893, and also at the Midwinter Fair in San Francisco in 1894. In order to accommodate the enormous yield of its own section alone, one wine company here recently erected a wine tank, with a capacity of half a million gallons, the largest in the world.

The total area covered by vineyards in the county amounts to 25,000 acres. At \$200 per acre (the average value of the vineyard in full bearing) this represents a value of \$5,000,000. With an average of 680 vines to the acre, we have the astounding total of 17,000,000 grapevines. The cost of producing a ton of grapes is estimated to be \$8. The grape-grower receives from \$10 to \$20 per ton for his product. Wine grapes yield from 140 to 150 gallons per ton. The price of wine, one year old, ranges from 10 to 20 cents per gallon. Last year there were

produced over 10,000,000 gallons, equivalent to 70,000 tons of grapes. The yield of grapes was therefore almost three tons, and of wine more than 400 gallons, per acre. At an average price of 15 cents per gallon for one-year-old wine, the value of the wine product of an acre of grapes is \$60.

The value of all the wine produced in the county last year is now about \$1,500,000. The average annual wine product for the past ten years is about 6,000,000 gallons.

In addition to wine grapes there are many choice table and raisin varieties grown.

Good grape land, unimproved, can be purchased at from \$15 to \$100 per acre, according to location.

#### SUGAR-BEETS.

Large acreages of sugar-beets are to be set out in Sonoma County this year, and the industry is assuming immense proportions. At Reclamation the California Hawaiian Sugar Company intends to set out over 1,800 acres, and a large force of men are employed at the present time. At Embarcadero, in the southeastern portion of the county, another large acreage, equaling that at Reclamation, is under cultivation. Both of these places are on tide water, and the overflow annually leaves a rich sediment on the land, which is particularly beneficial to the cultivation of the beets.

Splendid crops are annually yielded in this county, and in the near future it is probable that a large factory will be established for the purpose of extracting the sugar. Some time ago the Spreckels were considering the advisability of building a factory in this county, and construction may commence at any time.

#### TOBACCO.

Tobacco-growing has made a fair start and is one of the coming industries of the county. The plant will thrive in almost every section.

#### LUMBER.

The amount of lumber manufactured by the eighteen sawmills in Sonoma County during 1901 was over 15,000,000 feet. About 7,000,000 shingles are made annually in the county.

The handling of lumber and other forest products gives direct employment to about 2,000 men. A considerable business is done in wood and other split timber, about 20,000 cords of stove-wood alone being cut annually. A big business is also done each year in the handling of tanbark, etc.

The prices of Sonoma County pine and redwood lumber are as follows: Clear, or surface lumber, \$15 to \$18 per thousand feet; rough lumber, from \$9 to \$11; shingles, 40 cents per bunch; split pickets for fences, \$17 per thousand. The average cost of a redwood fence is about \$1 per rod.

## MISCELLANEOUS ITEMS.

Labor here commands better prices, especially competent and experienced farm hands, than in the East or in any part of Europe.

Sonoma County has a large number of mineral springs. The seltzer water from one of these is considered the finest in the United States.

There are five incorporated cities in the county: Santa Rosa, Sonoma, Petaluma, Healdsburg, and Cloverdale; also, steps are being taken to incorporate Sebastopol.

Russian River is Sonoma's great waterway. The greater portion of the county is drained by it and its tributaries.

The assessment roll shows that the amount of taxable property in the county last year was \$25,753,672, and the mortgaged property only amounted to \$3,628,760.

The Japan current gives us unfailing rains and regulates the temperature both summer and winter.

The total expenditure on county roads in 1900 was \$95,918.58. The number of miles covered by this sum was 1,185.

Of the amount collected in taxes, 20 cents on each \$100 are spent upon the roads. Compared with the East our roads are more solid and permanent. This is due to the absence of excessive frosts, which crack and break up the hardest ground, of whatever material it is composed.

The many and varied health-giving mineral waters, fishing and hunting locations, and summer resorts, make this county a paradise for the pleasure-seeker. Thousands of visitors spend the summer months in this county, each year, living in tents pitched along the many beautiful streams and in the numerous picturesque spots.

## PRICES OF LANDS.

Land values vary in price, according to quality, location, and what the land is wanted for. The rich river bottom land, with no crop, ranges from \$200 to \$300 per acre. Valley fruit land, not planted to fruit, from \$75 to \$125 per acre. Bench and hill lands suitable for hay, grain, or fruit, from \$25 to \$100 per acre; this includes vineyard lands. Stock ranges, from \$5 to \$25 per acre, which includes timber land.

These prices may seem, to some people, rather high, but when one considers what land produces here, the favorable conditions of the climate, and that such a thing as a total failure of crops has never been known, they can not be considered exorbitant.

We have in mind a place of 10 acres for which the owner paid \$200 per acre for the bare land. Setting to fruit, and improving, cost him \$1,500—making a total cost of \$3,500. The present annual net income from the place is \$1,000—or equal to 10 per cent on an investment of \$10,000. Therefore the land is well worth the price paid.

## WHAT CAN BE RAISED ON A SMALL FARM IN SONOMA COUNTY.

Secretary A. S. Luce, of the County Board of Trade, received the following letter, which explains what 10 and 20 acres can produce:

DEAR SIR: In compliance with my promise, I have looked over my books and have gathered some information which may be of interest to those who contemplate settling in these parts to follow fruit-raising.

I will take two places, the entire products of which we handled last year, and I think

these will serve as an average of all of the orchards and vineyards where there is reasonably good cultivation, and most important of all where the products are successfully marketed.

The first place consists of 38 acres, and the result of last year's harvest was as follows:

20 acres grapes .....	\$1,166 05
12 acres peaches .....	954 75
6 acres prunes .....	609 30
	<hr/>
	\$2,730 10

The second place has 13 acres, all in fruit and grapes:

8 acres grapes .....	\$863 40
2 acres prunes .....	299 28
3 acres peaches .....	539 53
	<hr/>
	\$1,702 21

Last year was not a banner year by any means. Grapes were a good crop. Peaches were only fair, and prunes rather light.

I could give you numerous cases of single crops which far exceed in value per acre those mentioned, but think it more valuable to quote prices as an average.

There is a great opportunity for families to settle in this section, and ten acres of fair land will make a comfortable living for them if planted in a variety of fruit and good care applied. These small places are the most successful, as little or no outside labor is required, especially if there are children to assist in the gathering of the fruit, etc., so that the entire returns are realized to the benefit of the family.

We have the added advantage of ample market for all the fruit and grapes that can be raised, as we have a cannery, dried-fruit packing-house, and winery ourselves at Geyserville. There are also a cannery and several dried-fruit packing-houses at Healdsburg, and the wineries are too numerous to mention.

Yours very truly,

EDWARD WALDEN,

Of the firm of Walden & Co., fruit-growers and packers, of Geyserville.



## STANISLAUS COUNTY.

Stanislaus County is one of the San Joaquin Valley group, and is bounded on the north by San Joaquin and Calaveras, on the east by Calaveras and Tuolumne, on the south by Merced, and on the west by Santa Clara. It extends across the entire width of the San Joaquin Valley, reaching from the summit of the Coast Range on the west well into the foothills of the Sierra Nevada on the east, and includes within its limits an area of 1,500 square miles, or 924,800 acres. Both its eastern and western borders present on the map greater breadth than the center.

The San Joaquin River, a navigable stream for eight months in the year, flows across the county some miles west of the estimated geographical center. From that stream diverge two tributaries, or arms, the Stanislaus and Tuolumne, both leading eastward to the Sierra, and both of which are navigable for from three to six months in the year. There are also several other streams of more or less importance throughout the county.

The greater part of the county is an almost level plain, stretching away in every direction until it merges into the foothill and mountain region on the east and west.

### CLIMATE.

The climate of Stanislaus does not vary materially from that of the other counties in the San Joaquin Valley. The summer months are warm, and in July and August frequent hot days occur, when the mercury will rise to 100° and over. The autumn months are very pleasant, and the spring months perfect. During the winter, which extends from November to April, the weather, when no rain is falling, is all that could be desired—pleasant, balmy, and invigorating. Occasionally a light frost will occur, but seldom of sufficient severity to do any damage, except to the tenderest vegetation.

The average rainfall in Stanislaus is under the general average of the State, the precipitation at Modesto being about 9½ inches. The following table shows the average monthly precipitation at the principal points in the county:

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Grayson.....	2.21	1.77	1.62	1.22	.44	.17	.00	.00	.01	.47	1.22	2.70
Hills Ferry...	1.17	2.11	2.45	1.47	1.04	.41	.00	.00	.19	.32	.56	1.97
La Grange.....	2.86	2.75	2.55	1.48	.52	.08	.00	.00	.30	.98	1.98	2.22
Modesto.....	1.84	1.31	1.27	1.03	.40	.13	.01	.00	.11	.42	1.25	1.63
Oakdale.....	1.51	.53	3.41	1.56	.25	.05	.00	.00	.00	.30	.73	1.10
Turlock.....	1.05	1.70	1.62	1.54	.62	.38	.00	.00	.03	.64	.80	.97

## SOILS.

On the eastern side of the county the soil is of a sandy nature, merging into loam as the foothills are approached. The prevailing soil on the west side is a rich loam of indefinite depth, and which under water is wonderfully fertile. The San Joaquin River divides the county a little west of its center line, and this is bordered by a belt of bottom land from 1 to 2 miles in width. The lands immediately adjoining this on the east side, for a width of from 1 to 5 miles, are principally adobe. The low lands adjoining the Tuolumne River are very sandy, while those along the Stanislaus are a dark, firm loam. In the central part of the county the soil is of a sandy character, especially to the south of the Tuolumne River, changing northward and westward to grayish and blackish loams. Some alkali patches are found in the lower lands, but these are not extensive.

## IRRIGATION FACILITIES.

Two hundred and sixty thousand acres of the central portion of Stanislaus County, lying between the Stanislaus and San Joaquin rivers and bisected by the Tuolumne River, will within a few years comprise one of the garden spots of California. An irrigation system owned by the land embraces 176,000 acres at this writing, and although the system has been operative hardly more than a year, 20,000 acres are in alfalfa, fruits, and garden products. A year hence, 80,000 acres additional will be under irrigation ditches.

These irrigation systems are comprised in the Turlock and Modesto irrigation districts, organized under the Wright Act; the former comprising 176,000 acres lying between the Tuolumne and San Joaquin rivers, and the latter 82,000 acres lying between the Stanislaus and the Tuolumne rivers. The Tuolumne River is the source of supply for both districts. This stream has a watershed second only to that of one other river of the State, carries a vast volume of water, and is never-failing, being fed by the perennial snows of the Sierras. The water rights of the districts take precedence over all others save that of a mining company possessing a very limited appropriation.

The water is taken out of the stream, on either side, by means of a concrete dam constructed jointly by the districts at a cost of \$550,000. It is located just above the historic mining town of La Grange, well in the hills of the Sierras, 32 miles distant from the centers of the districts, and constitutes one of the greatest and most spectacular structures of the kind in the world. It is 327 feet in length, 97 feet through at the base, 12 feet through at the crest, and 127 feet in height, arching up-stream. This dam has now been in place eight years, and is as enduring as the everlasting rock-ribbed hills into which it is keyed.

The Turlock District canal system comprises 22 miles of main canal 74 feet in width at the bottom, and designed to carry a maximum depth of 8 feet of water; two main laterals, aggregating 35 miles, 40 feet in width on the bottom; and six sub-laterals, aggregating 80 miles in length, ranging from 18 to 30 feet in width, floor measurement. The main canal of the Modesto District system, partially completed, is 60 feet in width on the bottom, and will supply 90 miles of laterals ranging from 18 to 40 feet in width. This system will be completed within a

year from date—February, 1902. The Turlock District system represents a bonded indebtedness of \$1,200,000 at 5 per cent, the bonds running forty years, no part of the principal payable until 1922. The Modesto District system represents a bonded indebtedness of \$1,100,000 at 5 per cent, no part of the principal payable until 1922. The tax to defray interest and maintenance is about 40 cents per acre in the Turlock district and about 48 cents in the Modesto district, the property embraced in the city of Modesto paying two fifths of the Modesto district tax, which would otherwise be 80 cents per acre.

### FRUIT CULTURE.

Stanislaus produces oranges—fine, luscious Navels—in marketable quantities about Knight's Ferry, Oakdale, Modesto, and Hickman. Her olives, too, go on the market, green and pickled and in the shape of olive oil. Her Bartlett pears, prunes, apricots, grapes, and wines are known and appreciated abroad, and peaches will in the course of a few years add to the fame of her climate and soil. Nuts do well.

The horticultural interests of Stanislaus have received comparatively little attention, wheat-growing being the general industry—her wheat product for 1901 being no less than 110,000 tons; but now that irrigation is available the production of fruit will rapidly assume proportions and within a few years become a very material industry. On the bench lands along the rivers are some of the very finest orchards and small vineyards in California; and here and there on the uplands, particularly about Knight's Ferry and La Grange, where irrigation has been available to a limited extent, and in instances on the plains where pumping has been resorted to, fruit and grapes are seen in perfection. The Assessor's figures (1901) in this connection show:

	Acres Bearing.	Acres Non-Bearing.
Apple .....	58	-----
Apricot .....	151	-----
Fig .....	44	-----
Olive .....	108	23
Peach .....	162	74
Pear .....	47	-----
French Prunes .....	163	23
Lemon .....	7	5
Orange .....	62	3
Almond .....	18	25
Walnut .....	1	2
Grapes .....	317	-----

The sandy loam soil of which the bulk of the area of this great body of 260,000 acres of land is comprised, affords every advantage for intensive farming. Garden products are produced in abundance. Oranges, lemons, nuts, peaches, apricots, prunes, pears, nectarines, figs, olives, and table and wine grapes yield in gratifying quality and quantity; while alfalfa fields yield five crops of  $1\frac{1}{4}$  tons to the acre annually, and afford pasturage after the curing season.

Dairying interests are growing, promising to become a very prominent industry, because of the favorable conditions and excellent profits. A model creamery has been erected at Modesto, and skimming stations are being established in all tributary localities. Stanislaus County produced 700,000 pounds of butter during the year ending October 1, 1901, and the figures for 1902 will approximate 1,000,000 pounds. In addition

to the butter product, her dairy interests are represented in the markets by large quantities of cream and cheese.

The famed Atwater sweet potato district adjoins the Turlock district—soil and climate of the same warp and woof. Turlock sweet potatoes are in as keen demand and bring as good prices as the Atwater product, and the yield is none the less heavy.

There are 10,000 acres in alfalfa on the West Side, stretching from Crow's Landing south to Newman, under a branch of the San Joaquin and King's River Canal, and the dairy industry in all its branches flourishes exceedingly, maintaining three creameries, a score of private separating plants, and a number of cheese-making institutions. Land in alfalfa rents for as high as \$10 per acre per annum, the lessee paying the water rate. On the East Side, about Oakdale, we find a large percentage of the orchards and gardens; and alfalfa is now receiving considerable attention, the Oakdale Irrigation Company's system affording water for irrigation, the water being derived from the Stanislaus River through the medium of the Stanislaus and San Joaquin Canal Company's system.

#### LIVESTOCK-RAISING.

There are large bands of cattle and sheep in this county, most of them being driven to the mountains of Tuolumne and Alpine counties for summer range. Much attention is paid to breeding fine horses, and excellent grades are the result.

The poultry interests of the county are profitable and increasing. The Assessor returned 1,162 dozen in his last report. A lady near Modesto started the year with 40 dozen and closed it with cash and poultry representing a profit of over \$100 per month.

The stock interests are quite extensive, in this connection the Assessor's figures showing:

		Valuation.
Beef cattle .....	103	\$3,090
Stock cattle .....	9,610	146,395
Cows .....	4,225	104,415
Calves .....	5,900	41,670
Hogs, pounds .....	556,687	16,700
Mules .....	5,655	176,670
Jacks and jennies .....	38	5,090
Thoroughbred horses .....	26	1,925
American horses .....	3,279	88,990
Common horses .....	2,787	57,875
Mule colts .....	821	13,875
Colts .....	727	9,980
Imported or fine sheep .....	282	1,415
Common sheep .....	25,484	50,335
Lambs .....	11,758	10,115

#### CEREAL PRODUCTS.

And here, too, are some interesting and instructive statistics and comparisons, from the same source:

##### NUMBER OF ACRES SOWN FOR CROP OF 1901.

Wheat .....	255,270
Oats .....	185
Barley .....	50,625
Corn .....	60
Hay .....	1,920
Rye .....	17,280
Alfalfa .....	6,770
Total acreage .....	332,110

There were 20,330 acres less sown to wheat for the crop of 1901 than for the crop of 1900, and 50,000 acres less than for the crop of 1899; 8,435 acres more were sown to barley than in 1900, and 21,925 acres more than in 1899. The increase in alfalfa acreage to March 1st was 520 acres. There were 610 acres less hay. The increase in acreage of rye was very large.

#### PRINCIPAL TOWNS.

Stanislaus County has a population of about 10,000.

Modesto, the county seat, has first-class county buildings, substantial business blocks, good hotels, schools, churches.

Oakdale, on the Stanislaus River, 14 miles northeast of Modesto, is the center of a large fruit and grain region.

Knights Ferry, in the foothills, has fine orange groves, vineyards, winery, and flouring-mills.

Other towns are Waterford, Montpelier, La Grange, Ceres, Turlock, Grayson, and Newman—all produce and grain shipping places with large warehouses.

The timber of Stanislaus, used mostly for fuel, is scattering groves of white and live oak, and the scrub pines of the foothills.

#### LAND VALUES.

Farming lands range from \$25 to \$50 an acre, according to quality and location. The best bottom fruit lands can not be bought for less than \$75 to \$100 an acre, near the central shipping points. Remote from the towns lands are much cheaper. On the west side of the San Joaquin the Miller & Lux irrigation canals have brought water to a large acreage, which is now being devoted in small tracts to alfalfa, orchards, and vineyards, and 10-acre and 20-acre farms are no longer a novelty.

## SUTTER COUNTY.

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Sutter is the only county of California situated entirely in the great central valley of the State. No part of it extends to the foothills of either the Sierra Nevada or Coast Range mountains. As nearly all the county lies between the Sacramento and Feather rivers, the soil is mostly alluvial or delta land. The Sacramento River forms the entire western boundary, and is navigable throughout this entire distance of over 40 miles. The Feather River is on the east side, except in the southern part, where the county extends across the river, about 100 square miles being on that side of the river. The southern boundary of the county is only 12 miles from the State capital.

In size, Sutter is among the smallest in the State, its rank being 52, there being but five smaller. In population, it ranks 46; and in assessed valuation it is 39th. The average assessment to each voter in the State, outside of San Francisco, is \$3,350. In Sutter the average is \$4,310, being the highest of any county in the State, except the metropolis.

### TOPOGRAPHY.

The area of the county is 611 square miles, or 391,040 acres. Of this the Butte Mountains and the tules constitute slightly more than one third. All the remainder is level, arable, and now under cultivation.

The Sutter Buttes are located in the northwestern corner of the county. This peculiar mountain formation lies about in the center of the Sacramento Valley. The peaks rise to a height of nearly 2,000 feet, while the whole extent of these mountains only covers about 40 square miles. The plains surround them on all sides, the level alluvial lands running up to the foot of the mountains, where the character of the soil changes from a sandy or clayey loam to a gravelly loam. Many small fertile valleys extend well into these hills, which, while not tillable, furnish excellent pasturage throughout the winter and spring.

Beginning on the southern side of the Buttes, and extending to the junction of the Feather and Sacramento rivers, is the Sutter tule basin. During the winter the water of Butte Creek, joined to the overflow from the Sacramento River, pours into this basin until it is filled to a depth of from 2 to 15 feet. In the spring and summer a dense mass of tules, a soft reedy growth, springs up, frequently to a height of 12 or 15 feet. In the fall and winter this dies down and is covered with sediment brought down by the next high water. This going on for ages has formed a soil of marvelous fertility. The area of this basin is about 125,000 acres. Several small sections of this land have been reclaimed by building levees, but the greater part is still in its natural condition. During recent years, the growing of late crops of beans and potatoes on this class of land has been found to be very profitable, and each year sees the area of such planting extended. Improvements now being made to the Sacramento River by the State and National governments will soon render this character of land still more valuable.

The arable land of the county is mostly a sandy loam with a heavy clay subsoil, which resists drought. A strip of adobe extends from the tules to the northern side of the county near the Buttes. The soil east of the Feather River is mostly red land.

### HISTORY.

General John A. Sutter, after whom the county was named, made the first settlement in 1841, on the west bank of the Feather River, about 7 miles south of Yuba City. The Mexican Government granted him a tract of land comprising, according to the description in the grant, about four fifths of the present county. He established a rancho, planted trees and vines, and watched his herds of horses and cattle roaming at will over the plains. When California was made a State his grant was only confirmed to some 10,000 acres.

With the discovery of gold came an influx of American settlers, who rapidly acquired title to the unoccupied lands. At first the settlers did not think that the dry plains would produce crops without irrigation, and farming was confined to the bottom lands next the river. When Horace Greeley, in a speech delivered in Marysville in 1860, declared that those plains would produce grain without irrigation, people thought it to be idle talk, but within ten years thousands of tons were being harvested each season.

### FRUIT-GROWING.

Fruit-growing as a commercial proposition was commenced nearly forty years ago by George Briggs, just below the town of Yuba City. He had there an orchard of about 300 acres, much of which has since been destroyed by debris from the mountain mines. The pioneer in grape culture was Dr. Chandler, who planted the first Muscatelle vineyard of 40 acres, 5 miles southwest of Yuba City. From these beginnings the acreage has been extended until at present the number of trees and acreage in vines are as follows:

#### NUMBER OF FRUIT TREES.

	Bearing.	Non-Bearing.
Apple.....	4,830	-----
Apricot.....	12,905	-----
Cherry.....	3,595	-----
Fig.....	2,591	-----
Olive.....	2,100	-----
Peach.....	134,910	22,525
Pear.....	21,907	1,200
Prune (French).....	38,972	2,500
Prune (other kinds).....	2,550	-----
Lemon.....	1,568	-----
Orange.....	4,497	-----
Almond.....	33,730	1,744
English walnut.....	2,045	-----
Totals.....	268,210	27,989

#### ACREAGE IN VINES.

Table grapes.....	21	15
Raisin grapes.....	343	209
Wine grapes.....	19	-----
Totals.....	383	224

During the present season tree and vine planting has been quite active. The number of trees planted will be about 50,000, of which not less than 90 per cent will be peaches. About 1,000 acres are being planted to vines, which are divided about 600 acres raisin grapes and 400 acres wine grapes.

Fruit-growing in Sutter County has passed through the experimental stage, and has become a tried and established industry. In early planting a little of everything was set out, on the plan that if one thing did not hit something else would, and the misses far exceeded the hits. Now it has been found that peaches are the crop; prunes, almonds, and pears following in the order named. Everything else is discarded, or nearly so. Other sections can do better than we can with apricots, cherries, etc. In the vineyard, nothing much is grown except Thompson's Seedless for raisins and Zinfandel for wine-making.

The crop of tree fruit in 1901 is estimated at about 30,000,000 pounds, although the shipments from the county would indicate a much larger amount, as much was brought here to be canned or dried or packed. The vineyard crop was cut short by a spring frost, which was the only serious one experienced in twelve years. This reduced the crop to less than half the average.

The Thomson Seedless raisin grape, which is the most extensively grown here, was first brought forward as a valuable grape by William Thomson on his place near the Buttes. About 1870 he bought four vines in Rochester, N. Y., and when they commenced to bear he found them to be different from the Seedless Sultana, at that time the only seedless grape grown in the State. By many it was considered superior, and soon was planted extensively. It has been found to be very profitable, now commanding the highest price of any raisin grown in the State.

#### MARKETS.

The market for fruit has broadened and become far more stable during the last few years. The cannery contracts for peach crops for periods of five years, if orchardists so desire. Dried-fruit buyers are always plentiful. One of the big San Francisco firms has a large packing-house in Yuba City. Both the green-fruit shipping firms have agents here during the season. A large part of the fruit shipped is now sold delivered on the cars. The greater part of the growers no longer consign fruit to commission houses. In preparing fruit for market the growers at present have a great advantage over those of a few years ago, in that as the industry has grown up there has grown with it a supply of trained help. Now there are plenty who know how to do the work, and it is well done.

Nearly every year sees one or more grain farms cut up and sold to orchard planters. Among those recently sold are the Stewart tract of 400 acres, Whyhr tract of 240 acres, Harkery tract of 200 acres, Littlejohn tract of 240 acres, Johnson tract of 400 acres, and others.

Experience has demonstrated that the industrious man with a small capital and a family can take twenty acres of orchard and make as much or more out of it than the grain-grower can make on a half section of good grain land. There have been no failures among the small orchardists.



## STOCK-GROWING—MINING.

Stock-growing and dairying have always been quite extensive industries in Sutter. The Butte Mountains furnish winter pasturage for large flocks of sheep and bands of cattle, while the tule provides summer feed. Along the Sacramento and Feather rivers are many alfalfa fields. Dairying has received quite an impetus from the establishment of the creameries at Knight's Landing and Vernon, with skimming stations at Tudor and Nicolaus.

Sutter has never produced mineral wealth to any extent, although gold has been found in the Buttes. Indications of oil are abundant; one shaft, sunk more than thirty years ago, has never ceased to furnish a supply of gas. No use has ever been made of it, nor any attempt to search further. It is believed that coal can be found in paying quantities, as small veins have been opened.

## CLIMATE.

The climate of the county, speaking broadly, is that of the entire Sacramento Valley. The prevailing wind from the south is a sea-breeze, which comes into the valley over the low hills about the bay of San Francisco. This wind at Sacramento is a west wind, but, striking the Sierra Nevada Mountains, it is turned north, and all the way up the valley is a south wind. During the summer, coming from the ocean it is cool and moist. The farther it goes north the less effect it has, so that points at the extreme north end of the valley have hotter summers than places 100 to 150 miles farther south. In winter it is a warm wind, and the same is true as to its effect near to or farther from its source.

When the valley has its occasional snow, say once in five years, it generally does not reach us. What is of most importance, however, is that spring frosts seldom interfere with fruit crops. The county, while located near enough to the sea to protect it from extreme cold, is yet far enough away so that fruit ripens much earlier than in the coast or bay sections.

The average rainfall of Sutter is ample; in fact, dry seasons, as a rule, produce the best grain crops, as was evidenced in 1898, when we had a dry year. The average of the summer-fallow grain was the best for several years.

## PRINCIPAL TOWNS.

Towns are scattered through the county. The largest is Yuba City, with a population of about 1,500. In the north, near Butte County, is Live Oak, a railroad town. Near the Buttes is Sutter, where a high school is prospering. Meridian, on the Sacramento River, is in the rich river and tule country. Nicolaus is on the Feather River, and Vernon, 10 miles south, at the junction of the Feather and Sacramento. These, with Tudor, Pleasant Grove, Marcuse, Pennington, and West Butte, furnish ample trading facilities.

The past fifty years has seen an entire change in methods of farming from the loose stock-raising and grain-growing to the intense cultivation of fruits. He who fails to follow the tendency of the times can not succeed as he ought.

## TEHAMA COUNTY.

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Tehama County is situated on both sides of the Sacramento Valley, and reaches from the summit of the Sierra Nevada Mountains on the east to the summit of the Coast Range on the west, with the Sacramento River running through the center from north to south. It is bounded by Shasta on the north, Plumas and Butte on the east, Butte and Glenn on the south, and by Mendocino and Trinity on the west. It has a breadth of 38 miles from north to south, and a length of 78 miles from east to west, giving it an area of 3,125 square miles, or nearly 2,000,000 acres.

### TOPOGRAPHY.

The surface of Tehama County consists, first, of a section of the Sacramento Valley, which, below Red Bluff, expands into a broad and level plain, swells on the west into low, level prairies, that farther on lift into broken hills, with the steep and rugged slope of the Coast Range beyond. Heading in these mountains, numerous streams flow east into the Sacramento, the principal of which are the Cottonwood, Dibble, Reed, Redbank, Elder, Thomas, and Stony creeks. On the east this valley is bounded by a lava flow, which extends for 20 miles or more up the western slope of the Sierra Nevada Mountains. Through these lava beds the large streams that carry the water caused by snow and rain on the slope of the Sierra Nevada have eroded deep, dark, and craggy cañons; above these lava beds the Sierra becomes more precipitous, rising at some points to an altitude of more than 10,000 feet.

To the north Mount Shasta lifts itself to a height of 14,442 feet above sea-level, 7,000 feet being covered with perpetual snow. On the east the Sierra Nevada stands as a great wall, linking the towering domes of Shasta and Lassen Butte, a volcanic cone over 10,000 feet high. To the west is the Coast Range, less lofty, but even more sharp and craggy in contour than the Sierra. The dark green of the coniferous forests that cover the lower slopes of these mountains contrasts strongly with the fields of snow that rest on their summits.

The average annual rainfall in the county is about 30 inches, which is more than falls farther down the valley. This large rainfall is very important to the agriculturist. It not only insures a much larger crop on the same kind of soil, and with the same tillage, but gives assurance against crop failures, as half that amount insures a fair crop. Half the rainfall of Tehama is more than the average amount of rain in some other portions of the State.

### SOILS.

Tehama County embraces some of the finest soils in the State. They are mainly alluvial and volcanic in their origin. The Sacramento River, or its ancient predecessor, has deposited on either bank wide stretches of rich alluvium. On the east side is a dark brown, almost

black, sandy loam, many feet in depth. Still eastward the land rises into slightly rolling hills of reddish soil, which soon run into the rough untillable lava beds. On the west bank the plain of tillable lands is wider. The soil on this side is in considerable part of a reddish tinge. The chief characteristics are the loamy river lands merging into a clayey loam second bottom; then the sandier soil of the plains, varying in color from gray to brown and red; then the roll of the hills begins, with reddish soil and gravelly loam predominating; next the bald hills of gray, brown, red, sometimes black, clayey loam, commonly called "adobe" hills, and still westward the hills rise higher, carrying a similar clayey loam covered with trees and underbrush abundant for firewood and not difficult to clear; and last, the elevation reaches the pine-clad summit of the Coast Range. The bottoms along the different creeks that flow into the river have their several peculiarities; but the usual soil, especially on the west side of the valley, is a yellowish alluvium, the area being generally not very wide, and joining more elevated benches of the soils already described. North of Red Bluff the soil undulates to the river banks, and is chiefly of a reddish clay and gravelly loam, and the wooded growth is more general.

There is very little waste land from the foothills of the Sierra to the foothills of the Coast Range. The beds of the streams constitute the greater portion of it. The different grades of soil will be viewed by different persons with widely varying opinions respecting their merits for profitable culture, yet there is very little doubt that all the soils, from the river bottoms to the coarsest gravelly hills, will be found available for some kind of husbandry. There is but very little of these lands that does not show a natural growth of trees and grass, indicating a soil ready to reward the intelligent cultivator. Large crops of grain, yielding as high as forty and more bushels to the acre, both on the bottom, the adobe hills, and the plains between, have fully demonstrated the fertility of all classes of the soil.

#### THE COUNTY'S RESOURCES.

Agriculture is the leading industry. Diversified farming is practiced very generally throughout the county.

Cereals of every description, alfalfa, and vegetables of all kinds do well. A large acreage was planted last season to sugar-beets.

At Vina is located the largest vineyard in the world, now the property of the Stanford University; and on this ranch is one of the choicest dairy herds of Holstein cattle in the State.

Peaches, prunes, olives, and pears are especially adapted for the county, as are all kinds of deciduous and citrus fruits, table and wine grapes, etc.

Livestock-raising is very profitable, especially the sheep industry; there being close to 200,000 head, yielding annually a large wool clip of a high grade.

Dairying is quite a prominent industry; also the feeding of beef cattle for outside markets. The ranges furnish natural forage grasses, there being over 700,000 acres of the finest grazing land.

Red Bluff is the county seat, with a population of about 4,000; it is the chief shipping point for the fruit crop. A large fruit cannery is

situated here, also a large planing mill, and a box, sash, and blind factory.

Near Corning are located the famous Maywood and Ritchfield colonies; also a completely equipped establishment for the canning of fruits and vegetables.

The irrigation facilities of the county are excellent. The Sacramento River, and Antelope, Thomas, and Deer creeks furnish an abundant and never-failing supply of water.

The last report of the United States General Land Office gives the area of unoccupied public land as over 560,000 acres, described as mountainous, foothill, grazing, and agricultural.

## TRINITY COUNTY.

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Trinity County is bounded by Siskiyou on the north, Shasta and Tehama on the east, Humboldt on the west, and Mendocino on the south. It is oblong in shape, its greatest length running north and south for 90 miles, while its width from east to west, at its widest part, will not exceed 55 miles. Its area is 2,625 square miles, or 1,680,000 acres, all included in mountains.

Mountain barriers inclose the county on three sides. Upon the north lie the Scott Mountains, upon the east the Shasta, and upon the west the Coast Range. These extend their spurs into all portions of the county, leaving but a small part of its area free from their contact; the entire surface of the county is, in consequence, broken, rugged, and precipitous. To this formation the county is indebted for its abundant water-supply, and it is watered by numerous streams, all having their sources in the county, and flowing eventually into the ocean on the west. Trinity River, the largest of these, rises in the north, flows southward for about 40 miles, and then turns sharply to the northwest, receiving in its course the waters of many tributaries. The southern part of the county has also many streams, and is a mass of high, rugged mountains.

Weaverville, the county seat of Trinity, has an altitude of 2,000 feet, and its climate differs little from that of other places of like altitude. In the summer the mercury will get well up in the nineties, and occasionally reach as high as  $105^{\circ}$  or  $106^{\circ}$ , but this is rare. The nights are always cool. The winters are cold for California, and frosty nights are not uncommon, the mercury sometimes touching  $10^{\circ}$  above zero, which is the lowest recorded. Owing to the altitude of the county at all points, the atmosphere is dry and pure, and the extremes of heat and cold do not cause so much discomfort as they would in less elevated regions. There is an average rainfall of 46 inches a year, the smallest precipitation recorded being in 1874-75, when there were 24.72 inches, and the heaviest in 1877-78, when 63.95 inches were reported.

Trinity is essentially a mining county, and but little attention has been paid to agriculture. Hay Fork Valley is about 10 miles long and from 1 to 2 miles wide. Through it runs Hay Fork and Salt creeks, and there are numerous springs in it. Trinity Valley is about 18 or 20 miles long and from  $\frac{1}{2}$  to 2 miles in width. The Trinity River passes through it. These are the two largest valleys in the county, and outside of these the agricultural land is generally found in small patches. Some fruit is grown for home consumption, and apples, pears, and plums do well. Berries of all kinds thrive and yield abundantly.

Trinity is not a fruit-growing county, but along the streams and rivers, in the mining towns, and on stock ranches are small family orchards, the chief of which are found at Weaverville, Junction City, and the surrounding vicinity.

The apples raised are very choice, and other fruits are of excellent flavor, but are only raised in very limited quantities for home consumption.

The area of agricultural lands under cultivation is small, the principal products being barley, oats, and wheat. Vegetables are raised for consumption in the towns and mining camps of the county.

Stock-raising is followed with profit, the mountain ranges furnishing excellent and nutritious grasses.

Weaverville is the county seat. Other towns are Lewiston, Trinity Center, Douglas City, Junction City—all located in the vicinity of the mining industries.

The population of the county is now close to 5,000, having increased through the revival of the mining industry, especially in the quartz and hydraulic branches. Considerable placer mining is still being done. Copper and other minerals are found in paying quantities throughout the county.

The last report of the United States General Land Office gives the area of unoccupied public land as over 1,428,000 acres, described as mountainous, hilly, timber, and grazing.

## TULARE COUNTY.

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Tulare County, out of which three or four valley counties have been carved, is still one of the larger counties in the State. It is about the size of Connecticut, is almost square, and contains 4,935 square miles, or 3,158,400 acres. It is a wonderful county—wonderful for the height and beauty of its mountains, for its enormous groves of giant sequoia, for the fertility of its soils, for the abundance of watercourses, for the variety of products, for the prosperity of its people, for scenery that many declare to be superior to the Yosemite, for the highest mountain (Mount Whitney) in the United States on its eastern border, for the successful citrus territory, where are grown oranges that equal the finest produced, and for being the earliest territory to be settled up and devoted to agricultural purposes. Tulare is one of the greatest stock-raising counties in the State and the business is a legitimate part of agriculture. Cattle is raised for meat rather than for dairying, although the latter industry is keeping pace. The glory of Tulare is its deciduous fruit orchards, all along the channels of the Kaweah and Tule rivers. The soil is a deep alluvial loam, rich in nitrates and potash, and free from alkali.

Late frosts are rare. The spring is warm and early; and the heat of the summer, including the nights, which, while not uncomfortably warm, are free from the excessive chill common in some other sections of California, gives the fruit a perfect richness and sweetness.

While irrigation is general, at least to the extent of giving the trees one good drenching a year, there are many ranches where the underflow is only six to twelve feet from the surface, rising even higher in spring, and therefore no artificial watering is needed.

A canvass, made by the California Cured Fruit Association, of the bearing prune area of the county, shows that it is 2,800 acres. There were 14,200,000 pounds of cured prunes shipped from this district in the season of 1899, averaging over 3 cents, probably  $3\frac{1}{2}$  cents, a pound. The total shipment of deciduous fruit in 1900 aggregated about 30,000,000 pounds. Of this, more than half was dried fruit, largely prunes, and the remainder green or canned. In spite of a shortage of cars, 5,000,000 pounds of fruit were shipped. The picking, packing, drying, and canning of this crop calls for the services of nearly four thousand people (mostly boys and women), and this need of extra labor is experienced in all the valley fruit-growing counties in season.

The principal town and the county seat is Visalia. It is the oldest city in the valley, having been founded in 1852 by the brothers Vice, for whom it was named. It is a modern, well-improved, prosperous city, of about 3,500 people, with every prospect of continuous active growth in the future. In the old days it was the starting point of the overland stage, and to-day it is said of Visalia that it represents more per capita wealth than any other city of like population. Visalia is midway between San Francisco and Los Angeles, but it was not until

1897 that it was connected with the main lines of the railroad. The manufacturing interests include a flouring-mill, planing-mill, foundry, machine shops, granite-polishing plant, ice factory, bottling works, electric light plant, a fruit cannery, and four fruit-packing-houses. Electric power is supplied from a mountain watercourse, and it may be expected to give considerable impetus to local manufacturing.

Tulare City is the second in point of size in the county; it is about 10 miles south of Visalia, and has a population of about 2,500. The main line of the Southern Pacific, and the Tulare-Visalia line of the Santa Fé, pass through the city. In the surrounding country, cattle, hogs, and horses are raised, and there are flourishing orchards and broad wheat and alfalfa fields. It is supplied with substantial brick buildings on broad, beautiful streets. The removal of the railroad shops, and some unfortunate litigation in which the city became involved, served for a time to retard its growth; but as it possesses the fundamental elements of agricultural success, in climate, soil, and plenty of artesian water, it will hold its own with other places in the county.

The famed citrus fruit belt of Tulare lies about 20 miles east of Visalia, and includes a series of settlements or districts, chief of which are Lindsay, Exeter, and Porterville. This land is practically frostless. Throughout the upper portions of the valley, as the Sierras approach the plain, there intervenes a broad mesa, or table-land, averaging about 600 feet in elevation. This does not exist in Tulare County, where the mountains rise direct from the plain. The cold air, drawn from the upper levels, is carried over this little strip of land, nestling close to the side of the mountain, and it thus escapes frost.

The soil is shown to contain in exact proportions the elements needed for the growth of citrus trees. Freedom from fog gives immunity from insect pests, which need moisture in the air to prosper. The long warm summer brings the fruit to maturity earlier in the season than is the case farther south (where the nights are colder), and, as a result, Tulare County fruit reaches the Eastern market in November and the first weeks of December, in time for the Christmas trade. This is a great practical advantage.

Most of the district has a plentiful supply of water in the form of an underflow—a natural reservoir at a depth of from 50 to 75 feet. It is raised by pumping. Formerly the pumps were operated by gasoline, but electricity is now available at a reasonable price. Farm houses are lighted by electricity, and the cities of Visalia and Tulare and the towns of Exeter, Lindsay, and Porterville are supplied from the same plant.

There are about 5,000 acres under cultivation in citrus fruits, of which only a small part is in full bearing. The product averages about 700 carloads yearly, and is rapidly increasing. The Porterville oranges have repeatedly carried off first prizes in the citrus fairs of the State when entered against the products of the best sections of Southern California.

In the northwestern part of the county, in the Alta district, a considerable acreage is devoted to raisins. These do quite as well in this county as in any other section of the valley, although their cultivation has not been attempted on so extensive a scale as elsewhere.

Tulare County is forging ahead with gratifying speed. In the year 1901 improvements made have eclipsed any previous period. Butter factories have been established at Tulare City, Rockford, and Burton,



and these factories are in a flourishing condition. A skimming station has been established at Monson. A condensed milk factory, with a capitalization of \$25,000, will soon be established in Visalia. It will be operated in conjunction with the Visalia ice plant. Six hundred and fifty acres have been set out to citrus fruits since January 1, 1901, all of which land is located in the foothill country surrounding Exeter, Lindsay, and Porterville. During the year, about 11,000 acres of new land has been brought under cultivation and planted to alfalfa, with satisfactory results. There has been a marked increase in the dairy interests. A conservative estimate places the number of cows now in the county at four hundred more than at the beginning of the year. Another noticeable gain was made in horses and mules. There is a growing demand for draft horses and large-boned, big-muscled mules, and these animals command good prices. Thirteen hundred acres of barren land have been reclaimed by artificial irrigation, and this satisfactory result has led to the building of more ditches. One new irrigation canal, 5 miles long, near Porterville, which has just been completed, carries water to one tract of 2,800 acres.

## TUOLUMNE COUNTY.

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The geographical location of Tuolumne County is in Central California, and is known as the Southern Mines. It is situated on the western slope of the Sierra Nevada range, and is bounded on the north by Alpine and Calaveras counties, on the east by Mono County, on the south by Mariposa County, and on the west by Stanislaus and Calaveras counties.

Tuolumne County is 150 miles nearly due east from San Francisco, and varies in width from 8 to 12 miles. The eastern portion of the county extends into the western slope of the Sierra Nevada range. The entire surface may be said to possess a rugged character, with many small and fertile valleys and meadows, together with sloping hills heavily covered with timber.

The county seat is Sonora, being upon the line of the railroad, and about the center of the county.

The Sierra Railway connects at Oakdale with the line of the Southern Pacific Company, extending thence 53 miles in an easterly direction to Tuolumne, at which point junction is made with the Hetch-Hetchy & Yosemite Valley Railroad, which reaches into the high Sierras beyond, tapping the vast timber belts, and affording transportation at reasonable rates for lumber and mining material. The railroad passes directly through all the large towns of the county, and makes stage connections for outlying places. The above railroad was completed to Tuolumne in the spring of 1900.

A branch road from Jamestown to Angels, Calaveras County, is nearly completed, being the only railroad into that county. This branch road will open to location a great deal of land that heretofore has been inaccessible.

Tuolumne County has made some wonderful strides during the last five years, and those who visited the county at that period would now wonder at the advancement and improvements made. While the railroad has worked a hardship to some of our towns, by shutting off staging and teaming, it has been the means of bringing into the county many people who never would have come if compelled to travel by stage. The population of the county has increased; the assessment roll is larger; mining machinery can be placed at the mine for less cost; and every point in the county can be reached within twelve hours' ride from San Francisco.

The scenery of the county is unsurpassed. Its streams afford pleasures to the sportsman equal to any place in the State.

Tuolumne County is noticeable for its many roadways, aggregating something over 400 miles.

During the last six years the mining industry has been steadily on the improve. While mining is our greatest factor, the timber industry

is fast coming to the front (which is worthy of note) at Tuolumne, which is the terminus of the Sierra Railway and the junction of the Hetch-Hetchy & Yosemite Valley Railroad. This town was laid out by the West Side Flume and Lumber Company in 1899. Since that time the company has installed a large sawmill plant, capable of turning out over 100,000 feet per day. It has also completed a box factory, which will employ many hands. The company, in its various branches, has over 1,000 employés. It has erected a fine hotel, also a large general store with offices overhead, and its lumber yards cover a large area of ground. It has a narrow-gauge railroad which extends into the heavy timbered mountains, a distance of 25 miles. Logs are placed on flat cars, and hauled to the sawmill in Tuolumne. This town is but a quarter of a mile west of the old town of Carters, and both are surrounded by producing mines. The company has expended large sums of money in this enterprise, but is now commencing to receive dividends upon the investment.

#### CLIMATE.

The climate of Tuolumne County is very even; mean temperature, 70°. During the summer months the thermometer registers from 95° to 100° at the most, and then only a day or so at a time. The nights are cool and comfortable.

During the winter months 20° is often registered; but such days as are not rainy are generally sunny and pleasant. The nights as a rule are not uncomfortably cold.

In the high mountains about 30 miles east of Sonora, more rigorous weather prevails.

Rainfall, about 43 inches, on an average.

#### STATISTICS.

Output of Tuolumne County mines up to the end of the year 1901 is \$233,000,000, which amount includes early-day placer mining. The present yearly output is about \$2,000,000.

Some of the greatest producing mines in the State are located in Tuolumne County. There are about 500 patented mines, and in 1901 630 locations were recorded.

In the county there are about 1,200 stamps in place. The Eagle-Shawmut mine, near Jacksonville, is installing 150 additional stamps.

Population of county, 11,890; being an increase of 83.2 per cent during the last decade.

Assessed valuation of property, \$5,692,542.

Area of entire county, 1,956 square miles, or 1,256,000 acres. Government reserve, 360,320 acres; Yosemite reserve, 491,280 acres; open for settlement, 367,895 acres.

#### TIMBER BELT.

The timber belt of Tuolumne County is great in its dimensions, comprising 60 per cent sugar pine, 20 per cent yellow pine, and the balance cedar and fir. Upon some tracts the timber will run 300,000 feet to the acre, some of the trees measuring 33 feet in circumference and 300 feet in height.

The Tuolumne grove contains about 1,300 sequoias greater in dimensions than those of Calaveras.

#### SCENERY.

Table Mountain is, topographically, the most prominent feature of Tuolumne County. It extends between 20 and 30 miles along the central portion of the county, having an almost level top, lava-capped, with perpendicular sides rising to a height of 2,000 feet above the Stanislaus River. It was built up from a lava flow which first filled an ancient river channel, from which millions of dollars have been extracted, and where great deposits of gold still remain. As one travels through the county by team or on the railroad this mountain presents a most inspiring view.

Another noticeable feature is Hetch-Hetchy Valley, which equals the famous Yosemite in beauty and grandeur, although not as large. Situate therein is Lake Elnor, which is filled with mountain trout. The valley is inhabited by all kinds of game.

#### STRUCTURAL GEOLOGY OF THE COUNTY.

The famous Mother Lode traverses the entire western portion of the county, upon which is situated the Eagle-Shawmut, Republican, Clio, Jumper, Dutch, and Rawhide mines, also many others of minor note.

The foot wall of the Mother Lode is serpentine, with eruptive dikes accompanying the lode; while mineralized slate forms the hanging wall. To the east we come to the granite, some of which is basalt, with eruptive dikes in places; then comes what is known as the Calaveras formation, which is slate, covering a large area; farther east comes in granite again.

All east of the Mother Lode is what is known as the East Belt, upon which is situated many fine producing mines, together with prospects held under possessory title; there is also ground open for location. The East Belt in the last five years has made quite a record, and is fast coming to the front as the principal mining section of the Southern Mines.

The following list shows some of the metals found in Tuolumne County: Gold, silver, copper, arsenic, antimony, galena, zinc, iron, amphibolite, obsidian, asbestos, manganese, corundum, barite, and marble.

Tuolumne County has experienced no boom, but during the last six years its mineral productions have kept steadily on the increase, and taking in consideration her population, it is astounding the amount of gold produced each year. Considerable space could be devoted to the mining industry of the county, so will state that the Progressive Association of Sonora has issued a pamphlet thereon, including a map of the mineral belt, which can be obtained upon application to that association.

#### WATER-SUPPLY.

The main rivers of the county are the Stanislaus and Tuolumne, which form tributaries to the San Joaquin.

The Tuolumne has its source entirely within the limits of the county, and may justly be termed the river of a thousand lakelets, although a

number of these strictly come under the head of lakes; Lake Elnor, the largest, being 2 miles in width and 4 miles in length. The main or principal branch of the river flows through the Hetch-Hetchy Valley. This branch, with its many tributaries, commands about three fourths of the entire watershed of the county.

The Stanislaus River, to the north, with one of its branches forms the boundary line of this county and Calaveras.

From the main stream of the Stanislaus River to south fork thereof, at a point where the upper dam of the Tuolumne County Water Company is located, there is a tunnel over one mile in length, costing about \$250,000.

The water-supply at present is controlled by the above-named company, which was organized in 1852. The supply is ample for all requirements, being used for mining and irrigation purposes. It is furnished by a system of dams, reservoirs, and canals. The main canal runs from the south fork of the Stanislaus River, about 18 miles above Columbia, and extends to that town and vicinity. The size of the main canal is 7 feet on the bottom and 13 feet deep, with a grade of 16 feet to the mile. The main flume at the head is  $7\frac{1}{2}$  feet wide and 2 feet deep. The canal carries 2,100 inches of water in the summer season. There are three timber dams, all upon the south fork of the Stanislaus River. The lowest one is at Strawberry Flat, from 13 to 15 miles by way of the river to head of the ditch. One mile above is the second dam or reservoir, and 10 miles above the lower reservoir is the big dam. The capacity of the three reservoirs is equal to something over two months' supply. About 6 miles from the head of the main canal is a lateral ditch, with a capacity of 500 inches. This is 9 miles in length, and supplies all mines in the vicinity of Carters, Tuolumne, Soulsbyville, thence to Algerine section, 8 miles south of Sonora.

Four miles east of Sonora is located Phoenix Lake, which is the lower distributing point, covering Sonora district and the Mother Lode. At Phoenix Lake is located an electric power plant of 2,500 horse-power, owned by the aforementioned company. This plant supplies electrical power and lights to all the principal mines upon the Mother Lode. The canals and ditches aggregate about 100 miles in length, and distribute water over an area of 200 square miles.

The towns of the county are furnished with electric lights from power furnished by a plant situate upon the south fork of the Stanislaus River, 8 miles north of Sonora, and owned by the Tuolumne County Electric Light and Power Company.

#### FRUIT CULTURE.

In many places the soil of Tuolumne County is admirably adapted to fruit-growing, and in the foothills some of the finest apples in the State are grown. Semi-tropical fruits of every variety, and vines are cultivated, and yield an abundance of highly flavored fruit. The almond and walnut are cultivated, with encouraging results.

The county is not largely devoted to this industry, although the sections where small orchards of all varieties are cultivated prove that certain localities in the county are particularly adapted to fruit. Lemon and orange trees do well in the southern portion of the county.

Large quantities of grapes are shipped from the county each year, while the second class is made into wine of good quality.

Apples sold in Sonora during recent seasons for \$15 per ton; they were purchased by the McComber Cider and Vinegar Works. The above company planted trees in 1852, which were imported at a cost of \$2.50 each.

Champagne cider manufactured by McComber Bros. has a reputation throughout the United States.

The sunny, sheltered hillsides of Tuolumne County offer inducements for the culture of fruits. Land for such purpose can be purchased for from \$10 to \$20 per acre. With the present system of water ditches, such land can easily be irrigated, and when once planted to trees would double in price.

#### STOCK-RAISING.

Most of the stock-raisers produce sufficient hay for their own use; considerable is raised upon small farms, also. Little, if any, is shipped out of the county. During winter months hay sells for \$30 per ton in the mountains.

Stock-raising is controlled mostly by feed—by those who have ranges in the mountains for summer and pastures in the foothills for winter; although those controlling smaller tracts of land raise a few.

In the mountains in certain sections there is to be found meadows upon which grows the finest kind of bunch grass, while upon its hillsides wild oats and timothy afford a splendid feed.

In some sections, and especially in the neighborhood of Groveland, the ranges are so sheltered that it is not necessary to remove cattle the entire year, and as a rule the stock remain in good condition the entire season.

#### PRICES OF LAND.

Grazing land is held from \$4 to \$8 per acre, while timber land ranges from \$8 to \$20 per acre.

#### PRINCIPAL TOWNS.

The principal towns of the county are: *Sonora* (county seat) is situate about the center of the county, with a population of about 4,000. It has an elevation of about 1,825 feet, and is considered an exceptionally good business town. There has recently been finished one of the finest court-houses in the State, absolutely fire-proof, and even age can not impair it. To the present Board of Supervisors, and especially the chairman, is due credit for this fine structure.

*Columbia* is situate 4 miles to the north of Sonora. It is one of California's famous mining camps of early days.

*Tuolumne* and *Carters* lie 10 miles east of the county seat, and are situate in the center of the wonderful East Belt mining district, and have an exceptionally bright future, being the terminus of the Sierra Railway, and the junction of the Hetch-Hetchy & Yosemite Valley Railroad; also the headquarters of the West Side Flume and Lumber Company. Their population has increased in last thirty months from 1,000 to 4,000 souls.

*Jamestown* is 4 miles south and west of Sonora. The main offices of the Sierra Railway are located here. The railroad leading to Angels, Calaveras County, branches at this point, and will soon be completed.

*Quartz* and *Stent* are the next towns south, then comes *Chinese*, 12 miles southwest of Sonora, being the point where tourists take the stage for Yosemite Valley via Big Oak Flat and Groveland.

*Jacksonville* lies 12 miles south of Sonora, at which point there is at present being installed an electric power plant, which will furnish electrical power along the Mother Lode, and to mines situate in the district of Groveland and Big Oak Flat.

*Groveland* and *Big Oak Flat* are situate 22 miles southeasterly from Sonora, being across the main Tuolumne River, and in a rich mining section. There is to be found in this section many fine stock ranges, also some of the most comfortable mountain homes in the State. Fruits of all kinds thrive most luxuriantly in the many fertile valleys.

*Soulsbyville* lies 7 miles east of Sonora, in the heart of a rich mining section, and where is located the famous Soulsby mine that has produced \$5,000,000, but which has remained idle for a number of years. It has recently been reopened, and is producing as of old.

*Confidence* and *Sugar Pine* are situate still farther east, about 17 miles from Sonora, being near the line of the snow belt. They are supported by surrounding mines.

*Strawberry Resort*, situate about 35 miles north and east of Sonora, is becoming very popular with Oakland and San Francisco people, and is looked upon as the ideal fishing point in California. It has only been open a few seasons, and as yet is not thoroughly known. Any and all first-class accommodations can be had at this resort, and one is assured fine sport with both rod and gun.

## VENTURA COUNTY.

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Ventura County is located between the Mojave Desert on the east and the ocean on the west, and between the counties of Los Angeles and Santa Barbara. It is bounded on the north by Kern and San Luis Obispo counties, on the west by Santa Barbara, on the east by Los Angeles, and on the south by the Pacific Ocean. It has an area of 1,628 square miles, or 1,041,920 acres. Of this nearly 1,500 square miles are mountain and desert, valuable chiefly for their mineral products.

The arable area, however, is considerable in extent, much of that regarded as desert being very fertile under water, while through the mountains are found numerous little valleys. These valleys are of every shape and extent: from the broad expanse with square miles of level land to the little pocket among the hills. The principal of these is the Santa Clara. This valley extends nearly east and west across the county, and is traversed by the Santa Clara River, fed by numerous tributaries, as the Castis, Piru, Sespe, and Santa Paula. The average width of the valley is 10 miles, and large ranches extend from one end to the other.

Next in importance comes the Ojai Valley, a great amphitheater, whose walls are mountains rising like citadels in all directions. Overlooking the whole is Mount Topo-topa, rising to a height of 6,000 feet. This basin is well timbered, and has a very productive soil, giving the largest wheat yield per acre in the county. The Ojai Valley as a whole will attract, and that at no very distant day, hundreds of people who will engage in the raising of citrus fruits.

Other valleys are the Conejo, 1,000 feet up on the northern slope of the Guadalupe Mountains, well watered and admirably adapted for raising grain; the Simi, with its splendid oak forests and grazing lands; the Santa Ana, with its cultivated farms and orchards, its trout streams, and clumps of rhododendrons; the Las Posas, with its immense wheat fields and semi-tropic fruits; the Sespe, lying along each side of the Santa Clara River and the San Buenaventura Valley, narrow but picturesque, watered by the Ventura River, and dotted with pleasant homes.

The Santa Clara River traverses the entire length of the county from northeast to southwest. It is fed by several tributaries which rise in the mountains near the Santa Barbara line, chief of which are the Santa Paula, Sespe, and Piru, the latter having its rise in Kern County. The Ventura River rises in the San Rafael range, flowing nearly due south, and is fed by numerous springs and mountain streams. These two rivers reach the ocean but about six miles apart. They furnish abundant water for irrigating purposes when needed, Ventura being one of the best watered counties in Southern California, as nearly every valuable farm in the county can be reached with flowing water.

The soil in the valleys is generally a rich, inexhaustible loam, varying from 10 to 150 feet in depth, and yielding enormous returns for the labor expended upon it.



## CLIMATE.

The climate of Ventura County is adapted to a great range of agricultural pursuits, and in the different parts of the county nearly all varieties of fruit, except those of the tropics, can be produced. Near the coast the mercury seldom falls below 34°, or rises above 83°. In the valleys farther back from the ocean the weather grows hotter in the summer and cooler in the winter, the mercury sometimes reaching the freezing point in January and February, and leaving 100° behind in July and August. In the mountains snow sometimes falls in the winter months, but never visits the valleys.

## RESOURCES OF THE COUNTY.

The agricultural and horticultural resources of this county are of the highest order, and the following are returns of the crops of 1901: Lima beans, 525,000 sacks; other varieties, 35,000 sacks; walnuts, 1,000 tons; dried apricots, 1,000 tons; dried prunes, 75 tons; honey, 12 tons; sugar-beets, 140,000 tons; barley, 200,000 sacks; wheat, 150,000 sacks; hay, 10,000 tons.

In 1901 the bean crop largely exceeded that of the previous year, while the average price realized was \$4.25 per cental, bringing to the bean-raisers of Ventura County during the year 1901 the large sum of \$2,699,000.

Eleven thousand acres of sugar-beets will be planted at Chino this year, 4,000 acres more than ever before. At Los Alamitos 7,000 acres will be planted, which is the largest acreage ever sown there. The acreage at Chino will be 20,000, far beyond any former record. These three items total 38,000 acres. There is a factory at Santa Maria still to be heard from, which will put the total close to 50,000 acres. This is more than 100 per cent increase on any former year. The amount of money involved and labor employed make large figures. The farmers are supposed to get about \$60 per acre for their crops, on an average, which makes the amount \$3,000,000.

The following details of the campaign of 1901 show that sugar-beets are not only a very profitable crop, but demonstrate the fact that the Santa Clara Valley in Ventura County is the ideal locality for their cultivation, both for tonnage, yield per acre, and percentage of sugar contained: Number of acres planted in 1901, 12,535; number of acres harvested, 11,399; number of tons delivered and sliced at the factory, 161,740; average yield per acre, 12.23 tons; average price paid per ton, \$4.83; average amount realized per acre, \$59.08; average per cent of sugar, 17.6; highest average yield in any entire field (near Oxnard), 31.05 tons; highest amount realized from sale of beets, per acre, \$144.22; highest average per cent of sugar in any field (near Hueneme), 24.9. A study of the foregoing will show how valuable are the lands that produce such results, and \$250 per acre, the prevailing price for choice bean and beet land, is not too high.

The honey crop of the county is over 2,500,000 pounds annually; the bees having a large and varied range to gather honey from the abundant blossoms in the mountains and valleys.

The dairy industry is quite extensive and profitable, the cattle being mostly of pure breeds or high-class grades. Up-to-date and model creameries and skimming stations are located throughout the county.

Large quantities of hay of a very fine quality are raised, over 10,000 tons being shipped in 1901. Wheat and barley are the leading cereals, the crop last year of the former being 200,000 sacks and of the latter over 150,000 sacks.

Vegetables of every description thrive and large quantities are shipped to outside markets.

Other crops raised in the county are citrus and deciduous fruits, and walnuts. These have generally yielded satisfactory returns.

The oil industry in 1901 has been prosecuted with much vigor by those engaged in it, and has yielded better results than in any previous year.

The principal towns of the county are San Buenaventura, Oxnard, Santa Paula, Hueneme, and Ventura, besides other smaller and thriving ones.

The last report of the United States General Land Office gives the area of unoccupied public land as over 146,000 acres, described as mountain and rolling.

## YOLO COUNTY.

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Yolo County is acknowledged by all who are at all acquainted with its wonderful fertility, to be the gem of the great Sacramento Valley. Approaching it from the north or from the south, one is at once impressed with the increasing richness of the soil, and it is hardly necessary to look for the county line guideboard to know that you have crossed the line and are in the most fertile county of this great State. It is bounded on the north by Colusa County, on the west by Lake and Napa, on the south by Solano, and on the east by Sutter and Sacramento, the Sacramento River running the entire length of its eastern border. It has an area of 1,018 square miles, or 650,880 acres, being one of the smallest counties in the State.

### TOPOGRAPHY.

Probably four fifths of its area is level, but the western portion breaks into hills, with cañons and valleys of considerable extent, chief of which is Capay Valley, noted as one of the earliest fruit sections of the State, further mention of which is made below. The hills are nearly all used for grazing, except the numerous homesteads scattered throughout the area. Along the eastern side of the county, near the Sacramento River, is what is known as the "tule basin," which contains about 40,000 acres. These lands are overflowed during high water, but as the water recedes they furnish rich and succulent pasture for immense herds of stock. It will thus be seen that the county has very little waste land.

### WATER-SUPPLY.

The two principal streams are Putah Creek and Cache Creek, the former being the boundary line, for a portion of the way, between Solano and Yolo counties. Cache Creek is the outlet of Clear Lake, and where it leaves the hills it flows east, through the center of the county. Clear Lake, which lies in Lake County, is 25 miles long and about 8 miles wide, and receives the drainage of 420 square miles of the Coast Range. Its elevation is 1,300 feet above sea-level, and with Cache Creek as its only outlet, it will be seen that nature has furnished one of the most magnificent natural reservoirs to be found in the entire State, and probably in the whole United States. It is estimated that 50,000 horsepower could be generated by the waters of Cache Creek, and the water still be used to irrigate every acre of land on each side of the creek, after it reaches the valley. That such an opportunity for the profitable investment of capital should remain so long without being utilized, is little less than marvelous. The present irrigation facilities are limited in extent, the Moore Ditch Company covering only about 25,000 acres. A more comprehensive system is now being worked

up, by which it is proposed to cover 50,000 to 100,000 acres, and the system to be owned by the farmers themselves. It remains to be seen whether they will grasp the opportunity offered them, or will let the prize fall into the hands of a private corporation, and forever after be at its mercy.

### SOILS.

During high water, Cache Creek has brought down from the hills and mountains immense quantities of the very cream of the soil, and for ages has been depositing this upon the land. The result is, that the soil, which is a rich sedimentary deposit, is from 20 to 30 feet in depth, entirely without hardpan, and is as rich as the valley of the Nile. This is particularly true of a large area around Woodland, of which Professor Wilson, of the University of California (see Bulletin No. 100, page 162), says: "There is a strip of this material at Woodland, several miles wide, extending a distance of 18 miles. There is no finer agricultural soil than this sedimentary deposit. It is warm and fertile, with good drainage, yet holding a reserve of moisture to resist drought. It is ideal fruit land. You may find growing on this soil, wheat, barley, oats, corn, alfalfa, all the vegetables of a temperate and sub-tropical climate, apples, apricots, nectarines, plums, pears, peaches, prunes, oranges, lemons, limes, figs, pomegranates, grapes (table, wine, and raisin), olives, almonds, walnuts, berries, and melons. Some of these lands are better adapted to particular crops than others, yet I venture to say that there are eighty-acre tracts of this sedimentary soil in this valley, on which everything that has been named is now produced, and I am not sure but that within a single block in the town of Woodland most of these fruits and vegetables can be found growing."

As a matter of course, not all of the land of the county is as fertile as that described by Professor Wilson, but it is true that no other county in the State has so large an unbroken body of strictly first-class land. The same quality of soil is found in many other sections of the county, but not in as large an unbroken body as around Woodland, notably the sections around Knight's Landing, Yolo, Davisville, Winters, Esparto, Capay Valley, and the Sacramento River region. The foothills in the western part of the county, from Winters to Capay, and north, as well as those bordering Capay Valley, are mostly a very fertile soil, and a great many have planted orchards and vineyards, the warm soil and exemption from frost making it a very desirable location. As a proof of what has been said, we point to the fact that in this small county, the assessed valuation amounts to over \$16,000,000, the tax rate is the smallest of any county in the State, and not a dollar of indebtedness.

### CLIMATE.

As regards climate, Yolo County is particularly favored. The average winter temperature is 48.3°; average summer temperature, 77.7°; average annual temperature, 62.8°. The winter season is often entirely free from frost, while other seasons show a temperature as low as 20° above zero. This, however, is exceptional, and does no particular harm, as it comes at a time when all fruits, including oranges, have been gathered. The summer temperature often reaches 100°, and nearly every season,

during a hot spell, the temperature would exceed the 100° mark, but this is only for from one to three or four days. Nearly every afternoon during the summer a cool, refreshing breeze comes in about three o'clock. The evenings are the crowning glory of Yolo's climate. A person can sit outside without a wrap, the gentle breeze being just sufficient to make a perfect temperature. There is no raw, chilling wind, no dew at all, and nature seems to have done her best to make this the ideal evening climate.

The average annual rainfall is 17.25 inches at Woodland, but in the western part of the county, along the foothills, the precipitation is considerably more.

#### PRODUCTS OF THE COUNTY.

The products of Yolo County, as has been stated above, are varied. Until within a few years, the cultivated area was devoted almost entirely to the production of wheat and to stock-raising. She still holds the banner as the largest producer of wheat and barley, according to acreage, but in the meantime she is coming to the front as a fruit producer. Edwin S. Holmes, Jr., of the U. S. Agricultural Department, credits Yolo County with 1,114,300 bearing fruit trees, or over one eighth of the bearing fruit trees of the entire State. The statistics showing the number of cars of the different kinds of fruit shipped from Yolo County are not obtainable, but the above will show that it was no small item.

The grape industry is also a very important item, and is represented by an area of 2,000 acres of table grapes, 10,000 acres of raisin grapes and 8,000 acres of wine grapes. Yolo County has the honor of producing the first raisins of commerce ever made in America, and the late R. B. Blowers was the pioneer grower. The Seedless Sultana grape, which is grown here quite extensively, makes a very plump and "meaty" raisin, and for years the Woodland Sultanas have been acknowledged by the trade to be the best Sultanas in the State. The most of the Sultanas grown here are bleached, and last year over 90 per cent of all the bleached Sultanas of the State were produced in the Woodland district. The shipment of table grapes to the New York market is also quite an industry, and Yolo County stands well to the front as regards quality, and prices received, only one other section leading her.

Yolo County has been noted for years for producing some of the fastest horses in California, and any day, on the streets and roads, can be seen as fine specimens of driving horses as one would care to look at. Woodland has been a center from which thousands of horses and mules have been shipped during the past few years, and they have gone to all parts of the country, notably to Hawaii, the Philippines, South Africa, and to the Southern States.

The dairy interest is becoming quite a factor in this county. Five years ago, when it was proposed to erect a creamery, many of the farmers hooted at the idea of making first-class butter in this hot valley. The creamery was erected at Woodland, and is now annually turning out over 150 tons of as fine butter as can be found on the Pacific Coast. It is all handled by one firm, and they claim that the product does not more than half supply the demand. This creamery alone disburses \$75,000 among the farmers each year. There are now four creameries in the county, besides three skimming stations, and the dairy interest is increasing by leaps and bounds.

It is estimated that there are 40,000 acres of alfalfa in the county, and the area is rapidly increasing. As each acre, if cut for hay, will yield from six to eight tons, it can readily be seen how important the dairy interest may become. For stock of any kind there can be no better feed than alfalfa, either green or cured for hay. This accounts, in part, for the herds of fine cattle and sheep.

The pure Spanish Merino sheep of the Bullard estate have a world-wide reputation, and shipments have been made to all parts of the world. These parties are now forming a new flock of the Rembouillet Merino, having imported from Germany, three years ago, five bucks and twenty-five ewes of the very choicest specimens. They are also building up a very fine herd of Durham cattle. Numerous other parties have fine herds of Durham, Jersey, Holstein, Hereford, and Brown Swiss.

#### PRINCIPAL TOWNS.

The county seat of Yolo County is Woodland, a beautiful city of 3,500 population. Its streets are wide and clean, and are lined with shade trees, while here and there about the city can still be seen some of the majestic old oaks which suggested the name of the city. It has a fine city hall, a free public library, a sewer system, owns its own water works, has a gas, electric light and power system, a fine fire department, four banks (one of which has a paid-up capital of \$1,000,000), large fruit packing-house, raisin-seeding plant, two creameries, a 100-barrel flouring-mill in course of construction, a cannery also in course of construction, a fine opera-house, a business college, a high school, an academy, grammar schools, churches of all denominations, two daily and three weekly newspapers, fine business blocks, and elegant private residences.

Winters, with a population of about 1,000, is located on Putah Creek, in the southwestern part of the county, and is noted as the earliest fruit section in the State. Immense quantities of both green and dried fruit are shipped to the East from this point. It has the distinction of growing the northernmost date palm tree in the world which fully ripens its fruit, with the exception of one at Nice, France, and that is said to be not a true date palm.

Davisville is also located on Putah Creek, and is a very fertile section of the county. There are probably more almonds grown in this section than in any other district in the State.

Yolo, a town of about 600 population, is located on Cache Creek. It is also in a very fine fruit section, and boasts of having the largest almond orchard in the world. It has an olive oil and pickling plant. The olives used for oil are first dried, and then run through a mill, which separates the seed from the pulp, the latter then being pressed to extract the oil. It is claimed that this process gives an oil of very superior flavor, and is the only mill in existence which uses this process. The olives, after being dried, can be stored away and will keep in that condition for an indefinite time, thus giving the mill the entire year in which to work up the product.

Esparto is located near the mouth of Capay Valley, on Cache Creek. It is surrounded by a fine body of land, largely devoted to fruit, vines, and alfalfa. It has a high school, a creamery, a large brick hotel, and is quite a shipping point for wheat and barley.

The towns in Capay Valley are Capay, Guinda, and Rumsey. The valley is devoted largely to fruits and vines, and it is claimed to be an equal to the famous Winters district as an early fruit section. Large portions of the valley are practically free from frost, and there are numerous smaller valleys and cañons leading into the main valley, as well as many of the hills bordering on the valley, which are also free from frost, and are adapted to the growth of anything which will grow in any part of the State.

#### LAND VALUES.

Prices of land range from \$100 to \$150 per acre for the choicest land in the vicinity of Woodland, and some of the other sections of the county most fully developed, while land a little farther away can be had for \$60 to \$100 per acre. Wheat lands range from \$20 to \$60, while good grazing land can be had at \$2.50 to \$10 per acre. Considering the immense productiveness of the soil, together with the other natural advantages, prices of land are not only reasonable, but are very low.

## YUBA COUNTY.

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Yuba County derives its name from the Yuba River, which flows along its southern border, and is bounded on the north by Butte County, south by Placer, east by Nevada and Sierra, and west by Sutter County. Its average length in a northeasterly direction is 60 miles, and in breadth varies from 7 to 30 miles, giving it a superficial area of 617 square miles, or 440,000 acres. Yuba County very much resembles Sutter County. They are neighboring counties, and the physical characteristics of the one, with a single great exception, have their counterpart in the other. The exception is that while Sutter is entirely in the plains, Yuba runs up into the Sierra, a fact which alters completely Yuba's place in the economy of the State.

Yuba County occupies a position in the heart of the Sacramento Valley. That part embraced in the angles formed by the junction of the Yuba and Bear with the Feather River, is level and well supplied with small streams. The foothill region, which reaches from the valley eastward, is at first rolling, but becomes hilly, brushy, and rocky as the Sierra Nevada Mountains are approached. The northeastern portion is rugged and broken. The land is divided about as follows, between valley, foothill, and mountain: The area of the county is 440,000 acres—valley land, 105,000 acres; foothill land, 136,000 acres; mountain, 199,000.

### CLIMATE.

In the valley the wet and dry seasons are very distinctly marked, fog seldom appearing. The temperature during the day is usually high, but is cooled by the strong winds which constantly blow through the valley from the ocean on the south, and from the north by the cool air oozing down from the snow on the summit of the mountains of Siskiyou and Shasta. In summer there are a few warm days, but the evenings and mornings are invariably cool. The seasons also touch extremes which the coast belts never experience, the winter being 4° colder and the summer from 16° to 20° warmer. The thermometer during summer ranges from 76° to 90°, and in some instances reaches as high as 100° or over; but so dry is the heat that a long and hard day's work may be done in the open air without the laborer feeling any inconvenience or exhaustion.

### SOILS.

The valley lands of the county are deep and rich, and of an alluvial character, entirely free from rock and stones. The valley and foothill lands are, in general, well adapted to fruit-growing, and of late years there has been a steady advance of the horticultural industries there, especially along the Feather River.

The lands in the valley, or western half of Yuba, are mostly used for the growing of grain, though most of the farmers owning large tracts



have small orchards. On the east bank of the Feather River in Yuba County, where there is much rich bottom land, there are several large orchards and vineyards which are as fine as any to be found in California. The soil of the county is divided into three general classes—foothills, plains, and river bottom. The foothill land is peculiarly adapted to growing fruits. Up to a short time ago the foothill lands of this county were regarded by the settlers as almost valueless, but the success of fruit-growing on that class of land in adjoining counties, and the adaptability of the produce for long shipment, gave immediate value to them, and now lands are held at \$100 per acre, and upward, which twenty years ago would not have brought more than \$1. The lands on the plains are devoted principally to cereals, and there has been no failure of crop with them during the past twenty years. On this land the vine and fruit trees flourish without irrigation; however, the land could easily be irrigated, and soon will be, by means of ditches, a number of which are now in course of construction. The river lands are the best and most productive, fruit, grain, and vegetables being raised in abundance, and the income per acre is far above the general average. There is very little land in the county that can not be cultivated to great advantage, either in grain or fruit.

#### WATER-SUPPLY.

There is a lavish water-supply in Yuba County. There are three rivers—the Feather, Yuba, and Bear—bordering and passing through this county; each of these has numerous tributaries. Yuba was in early days one of the principal mining counties of California, and there is now a perfect network of old mining ditches which can be used for irrigating purposes. These ditches, with their tributaries, aggregate hundreds of miles. Their owners have extended many of these from the foothills to the plains below, and it is believed that these old mining ditches have sufficient capacity to carry water enough to irrigate all the arable land of Yuba County.

The average annual rainfall is between 17 and 20 inches.

#### THE COUNTY'S RESOURCES.

Of the area under cultivation, 38,135 acres are in wheat, 3,133 in oats, 7,450 in barley, 20 in corn, 7,459 in hay, 1,838 in alfalfa, and 990 in hops. The vine acreage is as follows: Table grapes, 45; raisin, 110; wine, 215. The number of fruit-bearing trees is 200,593; of non-bearing, 78,835.

Strawberries of splendid quality are raised in quantity. Stock-raising is also an important industry, giving every promise of drawing to it many wheat-growers in the near future.

Yuba's assessment roll for 1901 footed up \$5,069,255. According to the 1900 census, its population at that time was 8,620.

The foothill portion of Yuba County lies in what is known as the "thermal citrus belt"—the natural home of the orange, the lemon, and the lime. To successfully grow such fruits, however, irrigation is necessary. Fortunately water is abundant, accessible, and cheap. Olives and the finest quality of strawberries are also grown in these valley-dotted foothills, the lands of which are worth anywhere from \$15 to \$25.

At present they are principally given over to stock-raising, an important and profitable industry of Yuba County, made the more attractive because stock does not have to be housed in the winter.

The Browns Valley Irrigation District, comprising 45,000 acres of choice land, is situated in the Yuba foothills, lying between the Yuba River on the south, the Honcut Creek on the north, the valley land on the west, and the foothills on the east. The mean altitude of the district is about 300 feet. Steps have been taken in the courts to dissolve the district, but the irrigation system will still remain when dissolution shall have been accomplished, private owners controlling it as a business venture, pure and simple, selling water to those who may desire it, at low rates.

It is well to note here that those engaged in growing oranges in Yuba County possess, in common with the people of the northern and central portions of the State likewise employed, one great advantage over their southern competitors. Their fruit, which is of equal quality, ripens from four to six weeks earlier, making it possible to reach the Eastern markets in time for the November and December trade, thus assuring much higher prices than can be obtained later in the season. The somewhat greater heat of the nights of the summer and fall is the cause of the early maturity.

Yuba is one of the half dozen California counties which produce hops, the fields about Wheatland being famous. The first plants were set out in 1883, the success which followed being so pronounced that now about 1,000 acres are devoted to this purpose alone, the land being worth from \$200 to \$400 per acre. The industry has proved a profitable one to those engaged in it.

Wheat, barley, hops, hay, fruit, dairy products, and livestock are shipped in large quantities, and can be landed in San Francisco and Sacramento in a very few hours, enabling the shippers to get the best prices. Large quantities of hay, grain, fruits, vegetables, poultry, and livestock are marketed in the neighboring mining districts.

While the lumber industry of Yuba is not of the dimensions it used to be, the county still contains hundreds of acres of valuable timber lands, and the present output of the big mill near Camptonville is considerable. The several other establishments of the kind were destroyed by fire during the past few years. The cutting of timber, however, is still vigorously prosecuted, the logs going in most cases to mills across the line in border counties.

Indications point to a much more vigorous prosecution of the mining industry in Yuba County than has been the case during the past few years.

Marysville is the county seat. Wheatland is quite a large shipping point. Other prosperous towns are Brownsville and Camptonville.

The last report of the United States General Land Office gives the area of unappropriated public land as over 63,000 acres, described as agricultural, mineral, timber, and grazing.

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